

**INSULATED GATE BIPOLAR TRANSISTOR WITH ULTRAFAST SOFT RECOVERY DIODE**
**Features**

- Low  $V_{CE(on)}$  Trench IGBT Technology
- Low Switching Losses
- 5 $\mu$ s short circuit SOA
- Square RBSOA
- 100% of the parts tested for  $I_{LM}$  ①
- Positive  $V_{CE(on)}$  Temperature Coefficient.
- Ultra Fast Soft Recovery Co-pak Diode
- Tighter Distribution of Parameters
- Lead-Free, RoHS Compliant
- Automotive Qualified \*

**Benefits**

- High Efficiency in a Wide Range of Applications
- Suitable for a Wide Range of Switching Frequencies due to Low  $V_{CE(ON)}$  and Low Switching Losses
- Rugged Transient Performance for Increased Reliability
- Excellent Current Sharing in Parallel Operation
- Low EMI

**Applications**

- Air Conditioning Compressor

$V_{CES} = 600V$   
 $I_{C(Nominal)} = 24A$   
 $t_{SC} \geq 5\mu s, T_{J(max)} = 175^{\circ}C$   
 $V_{CE(on)} typ. = 1.57V$

AUIRGB4062D1  
TO-220AB

AUIRGS4062D1  
D²Pak

AUIRGL4062D1  
TO-262Pak

|      |           |         |
|------|-----------|---------|
| G    | C         | E       |
| Gate | Collector | Emitter |

| Base Part Number | Package Type | Standard Pack       |          | Orderable Part Number |
|------------------|--------------|---------------------|----------|-----------------------|
|                  |              | Form                | Quantity |                       |
| AUIRGB4062D1     | TO-220       | Tube                | 50       | AUIRGB4062D1          |
| AUIRGL4062D1     | TO-262       | Tube                | 50       | AUIRGL4062D1          |
| AUIRGS4062D1     | D² Pak       | Tube                | 50       | AUIRGS4062D1          |
|                  |              | Tape and Reel Left  | 800      | AUIRGS4062D1TRL       |
|                  |              | Tape and Reel Right | 800      | AUIRGS4062D1TRR       |

**Absolute Maximum Ratings**

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only; and functional operation of the device at these or any other condition beyond those indicated in the specifications is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability. The thermal resistance and power dissipation ratings are measured under board mounted and still air conditions. Ambient temperature ( $T_A$ ) is 25°C, unless otherwise specified.

|                            | Parameter                                       | Max.                             | Units       |
|----------------------------|-------------------------------------------------|----------------------------------|-------------|
| $V_{CES}$                  | Collector-to-Emitter Voltage                    | 600                              | V           |
| $I_C @ T_C = 25^{\circ}C$  | Continuous Collector Current                    | 59                               | A           |
| $I_C @ T_C = 100^{\circ}C$ | Continuous Collector Current                    | 39                               |             |
| $I_C (Nominal)$            | Nominal Current                                 | 24                               |             |
| $I_{CM}$                   | Pulse Collector Current $V_{GE} = 15V$          | 72                               |             |
| $I_{LM}$                   | Clamped Inductive Load Current $V_{GE} = 20V$ ① | 96                               |             |
| $I_F @ T_C = 25^{\circ}C$  | Diode Continuous Forward Current                | 59                               |             |
| $I_F @ T_C = 100^{\circ}C$ | Diode Continuous Forward Current                | 39                               |             |
| $I_{FM}$                   | Maximum Repetitive Forward Current ②            | 96                               | V           |
| $V_{GE}$                   | Continuous Gate-to-Emitter Voltage              | $\pm 20$                         |             |
|                            | Transient Gate-to-Emitter Voltage               | $\pm 30$                         | W           |
| $P_D @ T_C = 25^{\circ}C$  | Maximum Power Dissipation                       | 246                              |             |
| $P_D @ T_C = 100^{\circ}C$ | Maximum Power Dissipation                       | 123                              | $^{\circ}C$ |
| $T_J$                      | Operating Junction and                          | -55 to +175                      |             |
| $T_{STG}$                  | Storage Temperature Range                       |                                  |             |
|                            | Soldering Temperature, for 10 sec.              | 300 (0.063 in.(1.6mm) from case) |             |
|                            | Mounting Torque, 6-32 or M3 Screw               | 10 lbf·in (1.1 N·m)              |             |

**Thermal Resistance**

|                         | Parameter                                                      | Min. | Typ. | Max. | Units         |
|-------------------------|----------------------------------------------------------------|------|------|------|---------------|
| $R_{\theta JC}$ (IGBT)  | Thermal Resistance Junction-to-Case (IGBT) ③                   | —    | —    | 0.61 | $^{\circ}C/W$ |
| $R_{\theta JC}$ (Diode) | Thermal Resistance Junction-to-Case (Diode) ③                  | —    | —    | 1.2  |               |
| $R_{\theta CS}$         | Thermal Resistance, Case-to-Sink (flat, greased surface)       | —    | 0.50 | —    |               |
| $R_{\theta JA}$         | Thermal Resistance, Junction-to-Ambient (typical socket mount) | —    | 62   | —    |               |

\* Qualification standards can be found at [www.infineon.com](http://www.infineon.com)

**Electrical Characteristics @  $T_J = 25^\circ\text{C}$  (unless otherwise specified)**

|                                 | Parameter                               | Min. | Typ. | Max.      | Units                | Conditions                                                                  |
|---------------------------------|-----------------------------------------|------|------|-----------|----------------------|-----------------------------------------------------------------------------|
| $V_{(BR)CES}$                   | Collector-to-Emitter Breakdown Voltage  | 600  | —    | —         | V                    | $V_{GE} = 0V, I_C = 100\mu A$ ③                                             |
| $\Delta V_{(BR)CES}/\Delta T_J$ | Temperature Coeff. of Breakdown Voltage | —    | 0.3  | —         | V/ $^\circ\text{C}$  | $V_{GE} = 0V, I_C = 10mA$ (25 $^\circ\text{C}$ -175 $^\circ\text{C}$ )      |
| $V_{CE(on)}$                    | Collector-to-Emitter Saturation Voltage | —    | 1.57 | 1.77      | V                    | $I_C = 24A, V_{GE} = 15V, T_J = 25^\circ\text{C}$                           |
|                                 |                                         | —    | 1.87 | —         |                      | $I_C = 24A, V_{GE} = 15V, T_J = 150^\circ\text{C}$                          |
|                                 |                                         | —    | 1.94 | —         |                      | $I_C = 24A, V_{GE} = 15V, T_J = 175^\circ\text{C}$                          |
| $V_{GE(th)}$                    | Gate Threshold Voltage                  | 4.0  | —    | 6.5       | V                    | $V_{CE} = V_{GE}, I_C = 700\mu A$                                           |
| $\Delta V_{GE(th)}/\Delta T_J$  | Threshold Voltage temp. coefficient     | —    | -17  | —         | mV/ $^\circ\text{C}$ | $V_{CE} = V_{GE}, I_C = 1.0mA$ (25 $^\circ\text{C}$ -175 $^\circ\text{C}$ ) |
| $g_{fe}$                        | Forward Transconductance                | —    | 12   | —         | S                    | $V_{CE} = 50V, I_C = 24A, PW = 20\mu s$                                     |
| $I_{CES}$                       | Collector-to-Emitter Leakage Current    | —    | 1.0  | 25        | $\mu A$              | $V_{GE} = 0V, V_{CE} = 600V$                                                |
|                                 |                                         | —    | 3.5  | —         | mA                   | $V_{GE} = 0V, V_{CE} = 600V, T_J = 175^\circ\text{C}$                       |
| $V_{FM}$                        | Diode Forward Voltage Drop              | —    | 1.57 | —         | V                    | $I_F = 24A$                                                                 |
|                                 |                                         | —    | 1.40 | —         |                      | $I_F = 19A$                                                                 |
|                                 |                                         | —    | 1.47 | —         |                      | $I_F = 24A, T_J = 175^\circ\text{C}$                                        |
| $I_{GES}$                       | Gate-to-Emitter Leakage Current         | —    | —    | $\pm 100$ | nA                   | $V_{GE} = \pm 20V, V_{CE} = 0V$                                             |

**Switching Characteristics @  $T_J = 25^\circ\text{C}$  (unless otherwise specified)**

|                     | Parameter                            | Min.        | Typ. | Max. | Units | Conditions                                                                                                                                                                                   |                                                                                                                                                                                                 |
|---------------------|--------------------------------------|-------------|------|------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Q <sub>g</sub>      | Total Gate Charge (turn-on)          | —           | 51   | 77   | nC    | I <sub>C</sub> = 24A                                                                                                                                                                         |                                                                                                                                                                                                 |
| Q <sub>ge</sub>     | Gate-to-Emitter Charge (turn-on)     | —           | 14   | 21   |       | V <sub>GE</sub> = 15V                                                                                                                                                                        |                                                                                                                                                                                                 |
| Q <sub>gc</sub>     | Gate-to-Collector Charge (turn-on)   | —           | 21   | 32   |       | V <sub>CC</sub> = 400V                                                                                                                                                                       |                                                                                                                                                                                                 |
| E <sub>on</sub>     | Turn-On Switching Loss               | —           | 532  | 754  | μJ    | I <sub>C</sub> = 24A, V <sub>CC</sub> = 400V,<br>V <sub>GE</sub> = +15V, R <sub>G</sub> = 10Ω,<br>L = 210μH, T <sub>J</sub> = 25°C<br>Energy losses include tail & diode<br>reverse recovery |                                                                                                                                                                                                 |
| E <sub>off</sub>    | Turn-Off Switching Loss              | —           | 311  | 526  |       |                                                                                                                                                                                              |                                                                                                                                                                                                 |
| E <sub>total</sub>  | Total Switching Loss                 | —           | 843  | 1280 |       |                                                                                                                                                                                              |                                                                                                                                                                                                 |
| t <sub>d(on)</sub>  | Turn-On delay time                   | —           | 19   | 36   | ns    |                                                                                                                                                                                              |                                                                                                                                                                                                 |
| t <sub>r</sub>      | Rise time                            | —           | 24   | 41   |       |                                                                                                                                                                                              |                                                                                                                                                                                                 |
| t <sub>d(off)</sub> | Turn-Off delay time                  | —           | 90   | 109  |       |                                                                                                                                                                                              |                                                                                                                                                                                                 |
| t <sub>f</sub>      | Fall time                            | —           | 23   | 40   |       |                                                                                                                                                                                              |                                                                                                                                                                                                 |
| E <sub>on</sub>     | Turn-On Switching Loss               | —           | 726  | —    | μJ    |                                                                                                                                                                                              | I <sub>C</sub> = 24A, V <sub>CC</sub> = 400V,<br>V <sub>GE</sub> = +15V, R <sub>G</sub> = 10Ω,<br>L = 210μH, T <sub>J</sub> = 175°C ③<br>Energy losses include tail & diode<br>reverse recovery |
| E <sub>off</sub>    | Turn-Off Switching Loss              | —           | 549  | —    |       |                                                                                                                                                                                              |                                                                                                                                                                                                 |
| E <sub>total</sub>  | Total Switching Loss                 | —           | 1275 | —    |       |                                                                                                                                                                                              |                                                                                                                                                                                                 |
| t <sub>d(on)</sub>  | Turn-On delay time                   | —           | 12   | —    | ns    |                                                                                                                                                                                              |                                                                                                                                                                                                 |
| t <sub>r</sub>      | Rise time                            | —           | 23   | —    |       |                                                                                                                                                                                              |                                                                                                                                                                                                 |
| t <sub>d(off)</sub> | Turn-Off delay time                  | —           | 92   | —    |       |                                                                                                                                                                                              |                                                                                                                                                                                                 |
| t <sub>f</sub>      | Fall time                            | —           | 84   | —    |       |                                                                                                                                                                                              |                                                                                                                                                                                                 |
| C <sub>ies</sub>    | Input Capacitance                    | —           | 1487 | —    | pF    | V <sub>GE</sub> = 0V                                                                                                                                                                         |                                                                                                                                                                                                 |
| C <sub>oes</sub>    | Output Capacitance                   | —           | 118  | —    |       | V <sub>CC</sub> = 30V                                                                                                                                                                        |                                                                                                                                                                                                 |
| C <sub>res</sub>    | Reverse Transfer Capacitance         | —           | 44   | —    |       | f = 1.0Mhz                                                                                                                                                                                   |                                                                                                                                                                                                 |
| RBSOA               | Reverse Bias Safe Operating Area     | FULL SQUARE |      |      |       | T <sub>J</sub> = 175°C, I <sub>C</sub> = 96A<br>V <sub>CC</sub> = 480V, V <sub>p</sub> ≤ 600V<br>R <sub>g</sub> = 10Ω, V <sub>GE</sub> = +20V to 0V                                          |                                                                                                                                                                                                 |
| SCSOA               | Short Circuit Safe Operating Area    | 5           | —    | —    | μs    | V <sub>CC</sub> = 400V, V <sub>p</sub> ≤ 600V<br>R <sub>g</sub> = 10Ω, V <sub>GE</sub> = +15V to 0V                                                                                          |                                                                                                                                                                                                 |
| E <sub>rec</sub>    | Reverse Recovery Energy of the Diode | —           | 773  | —    | μJ    | T <sub>J</sub> = 175°C                                                                                                                                                                       |                                                                                                                                                                                                 |
| t <sub>rr</sub>     | Diode Reverse Recovery Time          | —           | 102  | —    | ns    | V <sub>CC</sub> = 400V, I <sub>F</sub> = 24A, V <sub>GE</sub> = 15V,                                                                                                                         |                                                                                                                                                                                                 |
| I <sub>rr</sub>     | Peak Reverse Recovery Current        | —           | 32   | —    | A     | R <sub>G</sub> = 10Ω, L = 210μH                                                                                                                                                              |                                                                                                                                                                                                 |

**Notes:**

- ①  $V_{CC} = 80\% (V_{CES}), V_{GE} = 20V, L = 210\mu H, R_G = 50\Omega.$
- ② Pulse width limited by max. junction temperature.
- ③  $R_\theta$  is measured at  $T_J$  of approximately 90 $^\circ\text{C}$ .
- ④ Maximum limits are based on statistical sample size characterization.

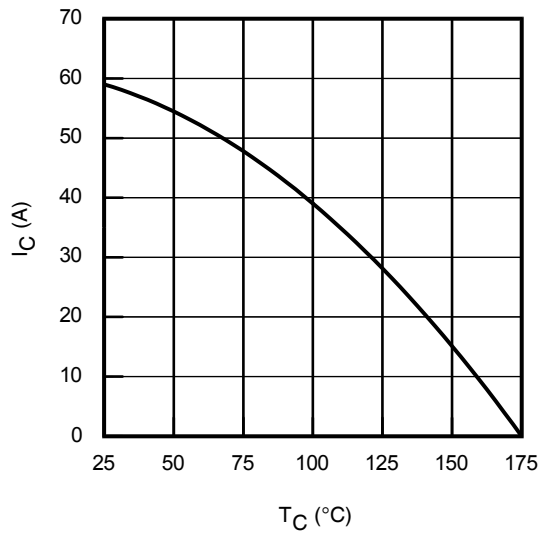


**Fig. 1** - Maximum DC Collector Current vs. Case Temperature

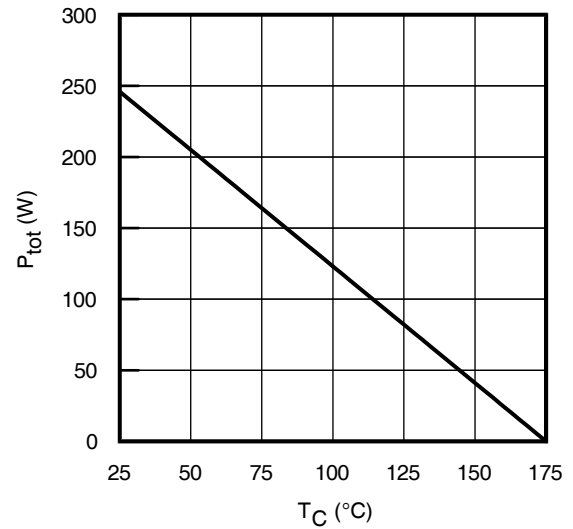


**Fig. 2** - Power Dissipation vs. Case Temperature

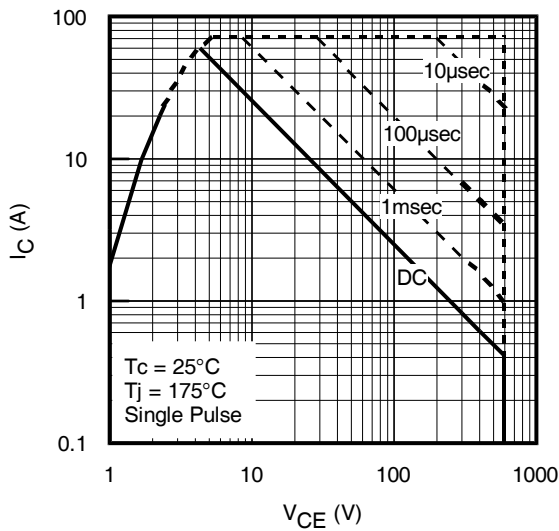


**Fig. 3** - Forward SOA

$T_C = 25^{\circ}\text{C}$ ,  $T_J \leq 175^{\circ}\text{C}$ ;  $V_{GE} = 15\text{V}$

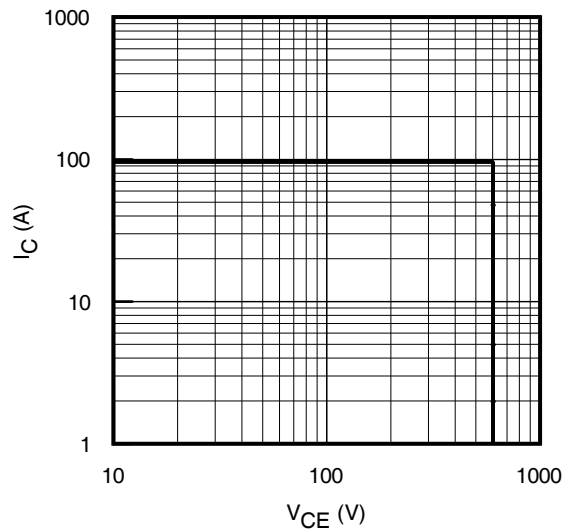


**Fig. 4** - Reverse Bias SOA

$T_J = 175^{\circ}\text{C}$ ;  $V_{GE} = 20\text{V}$

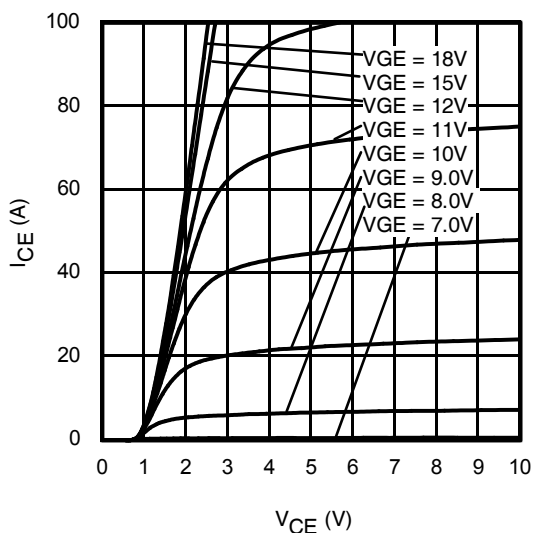


**Fig. 5** - Typ. IGBT Output Characteristics

$T_J = -40^{\circ}\text{C}$ ;  $t_p = 20\mu\text{s}$

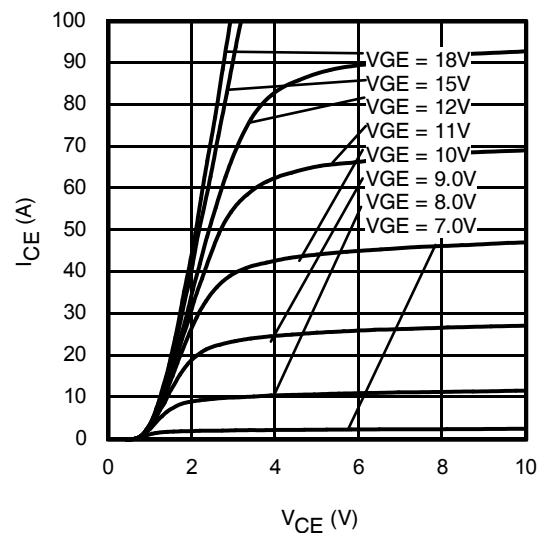


**Fig. 6** - Typ. IGBT Output Characteristics

$T_J = 25^{\circ}\text{C}$ ;  $t_p = 20\mu\text{s}$

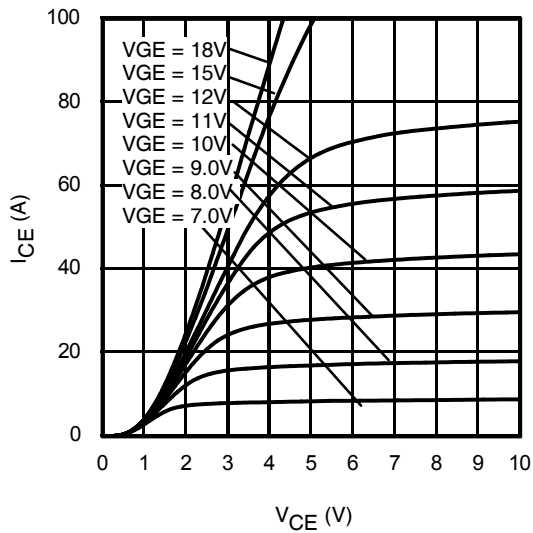


**Fig. 7 - Typ. IGBT Output Characteristics**  
 $T_J = 175^\circ\text{C}$ ;  $t_p = 20\mu\text{s}$

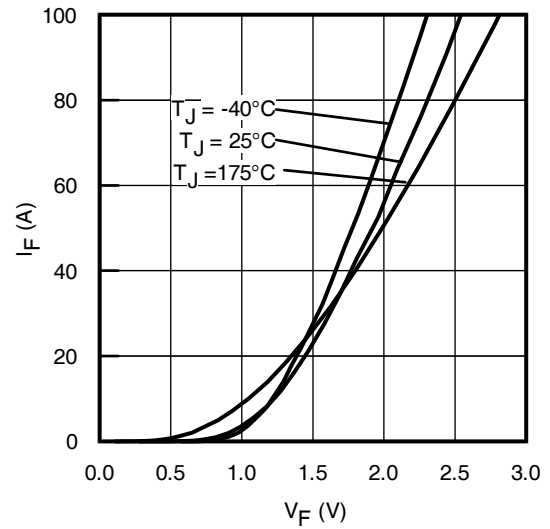


**Fig. 8 - Typ. Diode Forward Characteristics**  
 $t_p = 20\mu\text{s}$

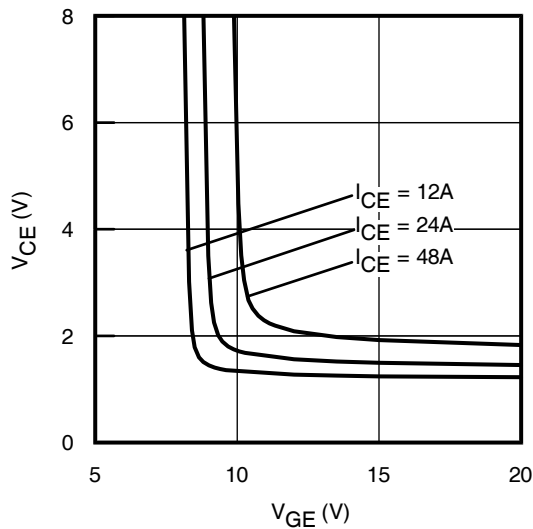


**Fig. 9 - Typical  $V_{CE}$  vs.  $V_{GE}$**   
 $T_J = -40^\circ\text{C}$

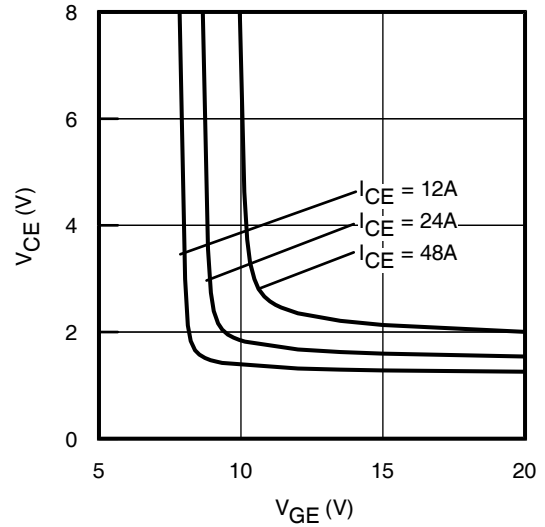


**Fig. 10 - Typical  $V_{CE}$  vs.  $V_{GE}$**   
 $T_J = 25^\circ\text{C}$

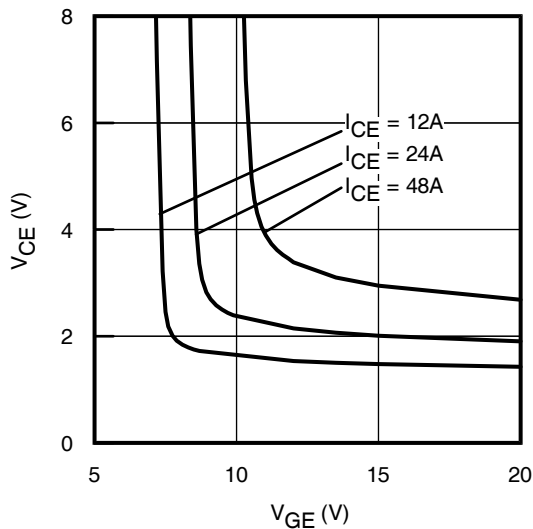


**Fig. 11 - Typical  $V_{CE}$  vs.  $V_{GE}$**   
 $T_J = 175^\circ\text{C}$

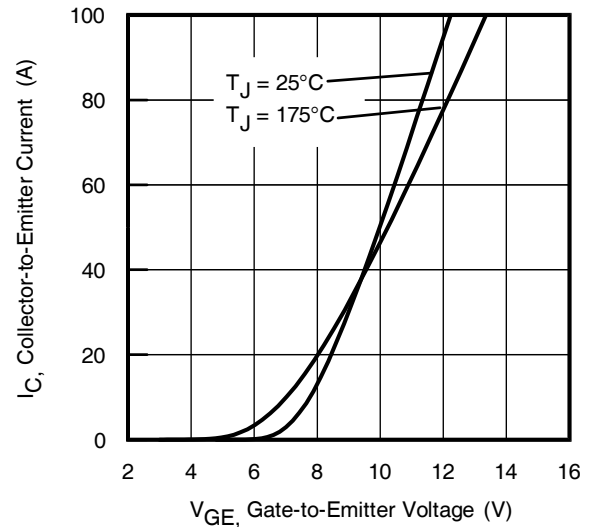
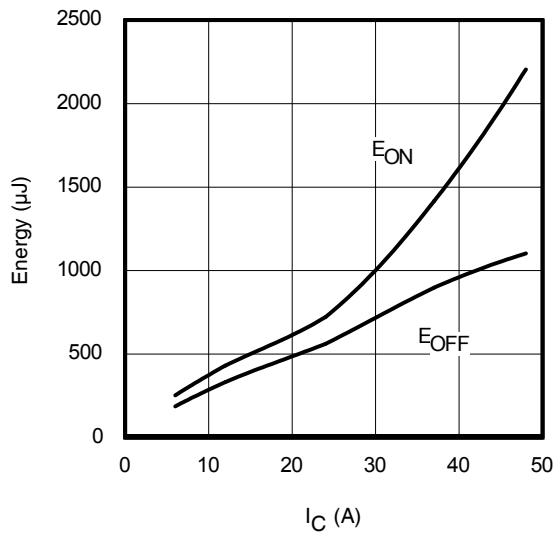
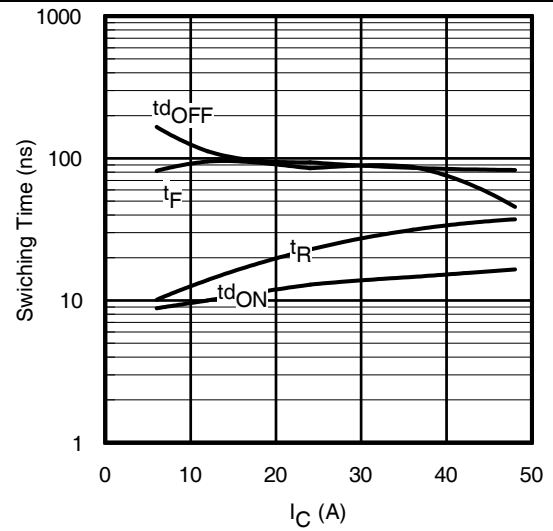
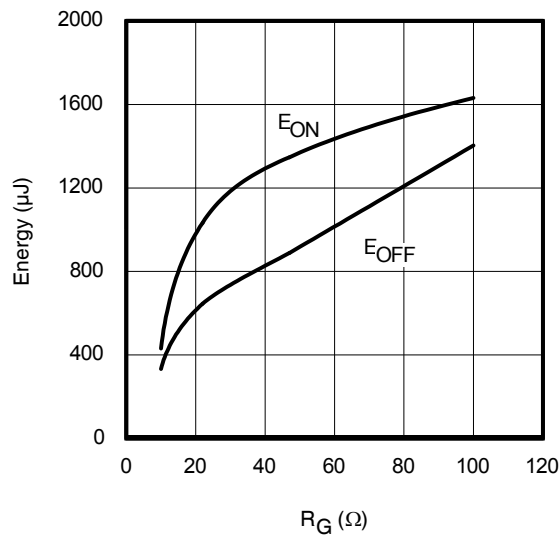
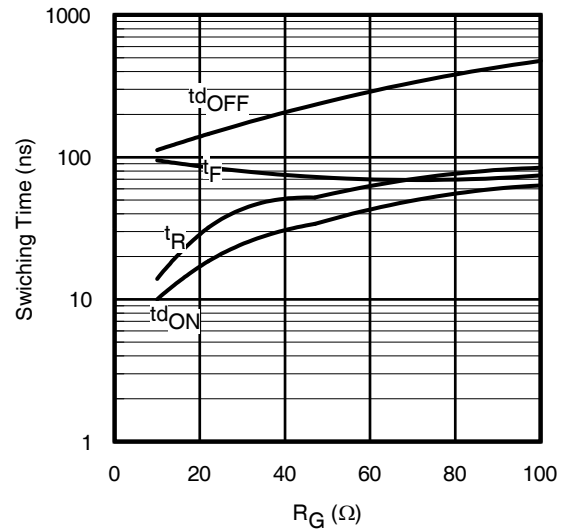
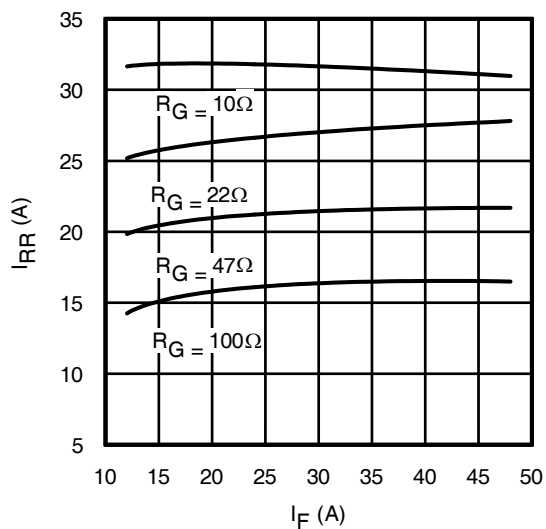
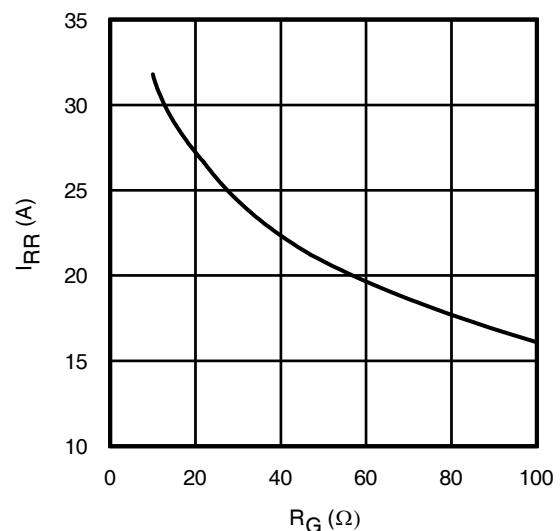


**Fig. 12 - Typ. Transfer Characteristics**  
 $V_{CE} = 50\text{V}$ ;  $t_p = 20\mu\text{s}$


**Fig. 13 - Typ. Energy Loss vs.  $I_C$** 
 $T_J = 175^\circ\text{C}; L = 210\mu\text{H}; V_{CE} = 400\text{V}, R_G = 10\Omega; V_{GE} = 15\text{V}$ 

**Fig. 14 - Typ. Switching Time vs.  $I_C$** 
 $T_J = 175^\circ\text{C}; L = 210\mu\text{H}; V_{CE} = 400\text{V}, R_G = 10\Omega; V_{GE} = 15\text{V}$ 

**Fig. 15 - Typ. Energy Loss vs.  $R_G$** 
 $T_J = 175^\circ\text{C}; L = 210\mu\text{H}; V_{CE} = 400\text{V}, I_{CE} = 24\text{A}; V_{GE} = 15\text{V}$ 

**Fig. 16 - Typ. Switching Time vs.  $R_G$** 
 $T_J = 175^\circ\text{C}; L = 210\mu\text{H}; V_{CE} = 400\text{V}, I_{CE} = 24\text{A}; V_{GE} = 15\text{V}$ 

**Fig. 17 - Typ. Diode  $I_{RR}$  vs.  $I_F$**   
 $T_J = 175^\circ\text{C}$ 

**Fig. 18 - Typ. Diode  $I_{RR}$  vs.  $R_G$**   
 $T_J = 175^\circ\text{C}$

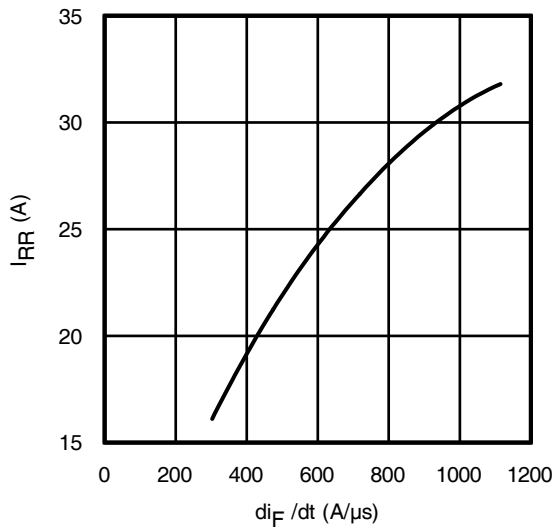


**Fig. 19** - Typ. Diode  $I_{RR}$  vs.  $d_iF/dt$   
 $V_{CC} = 400V$ ;  $V_{GE} = 15V$ ;  $I_F = 24A$ ;  $T_J = 175^\circ C$

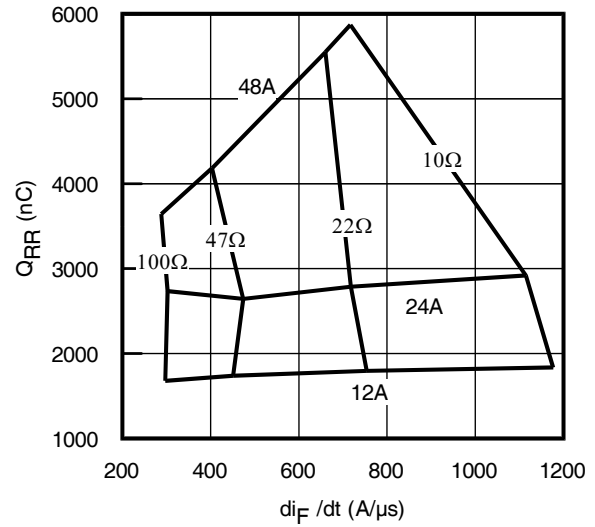


**Fig. 20** - Typ. Diode  $Q_{RR}$  vs.  $d_iF/dt$   
 $V_{CC} = 400V$ ;  $V_{GE} = 15V$ ;  $T_J = 175^\circ C$

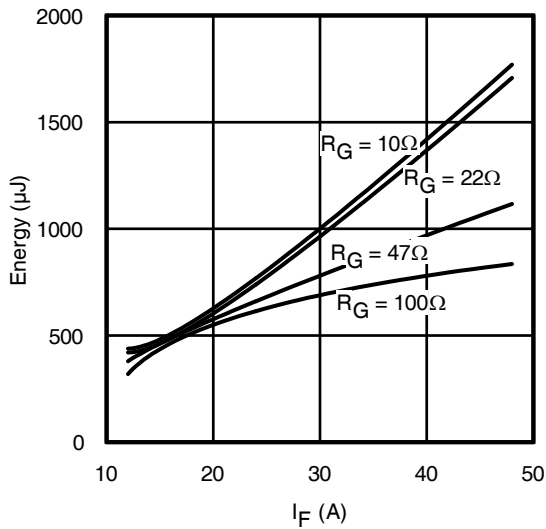


**Fig. 21** - Typ. Diode  $E_{RR}$  vs.  $I_F$   
 $T_J = 175^\circ C$

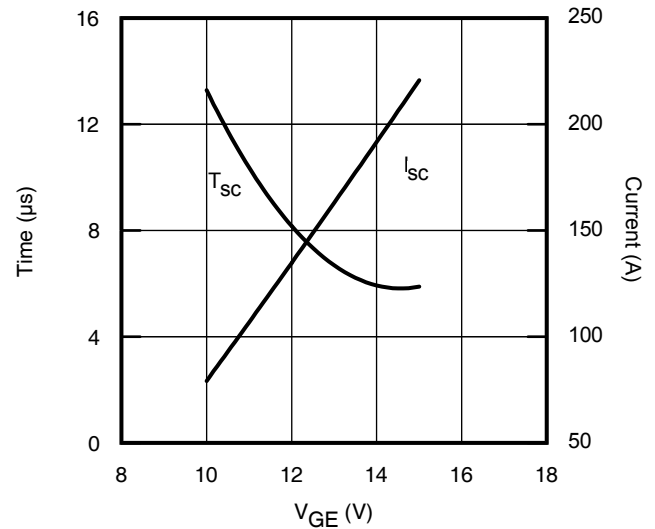


**Fig. 22** -  $V_{GE}$  vs. Short Circuit Time  
 $V_{CC} = 400V$ ;  $T_C = 25^\circ C$

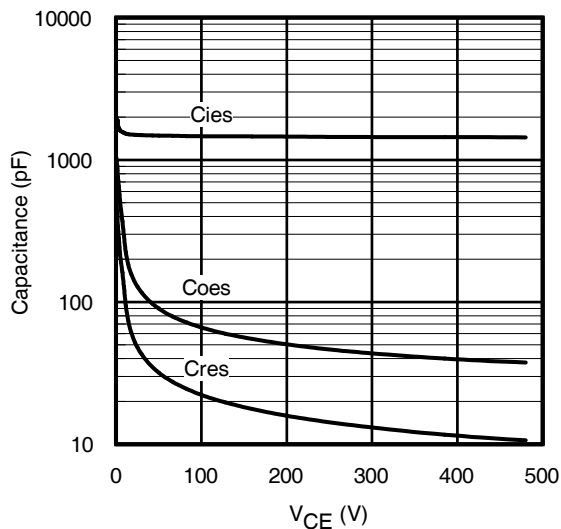


**Fig. 23** - Typ. Capacitance vs.  $V_{CE}$   
 $V_{GE} = 0V$ ;  $f = 1MHz$

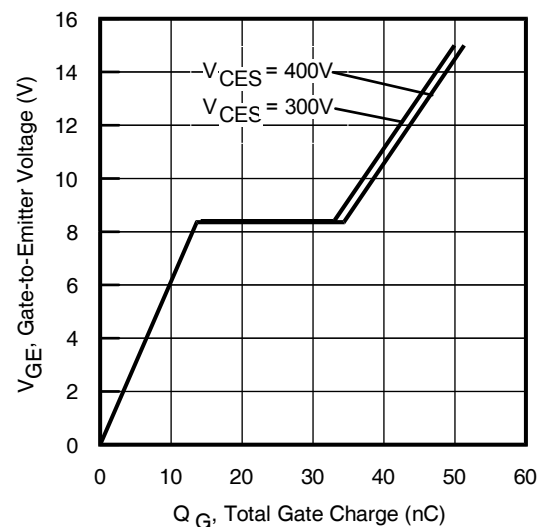


**Fig. 24** - Typical Gate Charge vs.  $V_{GE}$   
 $I_{CE} = 24A$ ;  $L = 585\mu H$

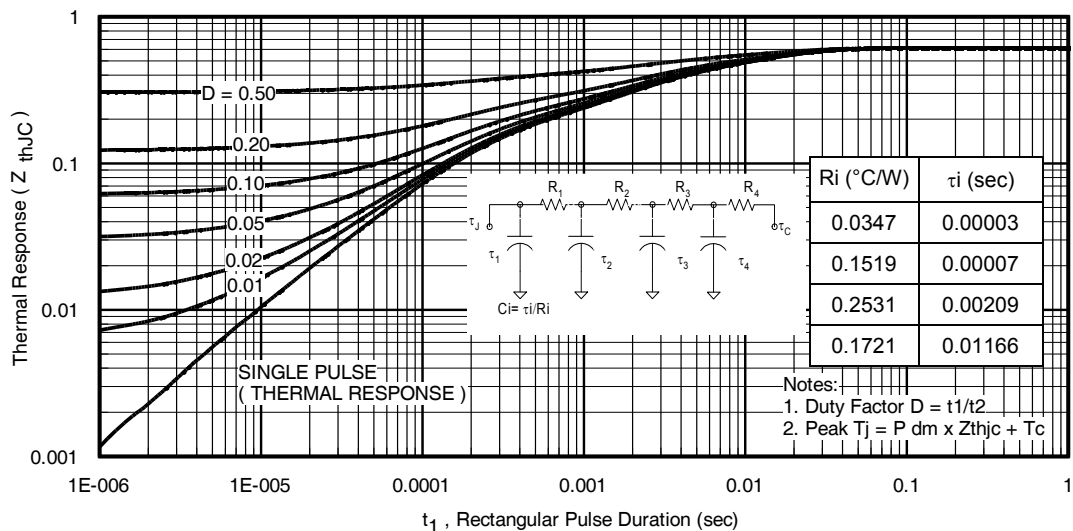


Fig 25. Maximum Transient Thermal Impedance, Junction-to-Case (IGBT)

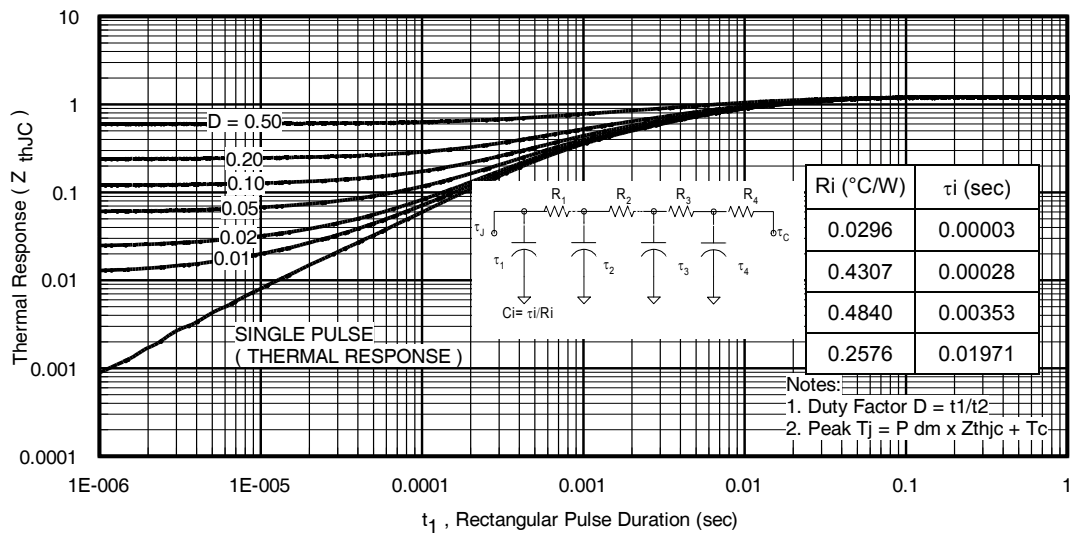
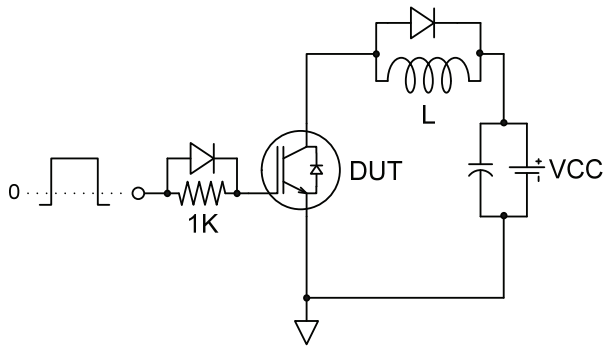
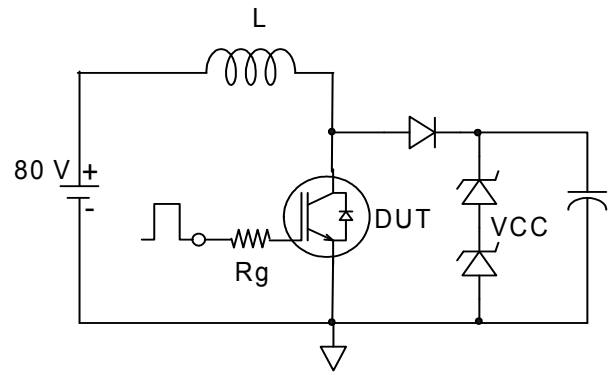
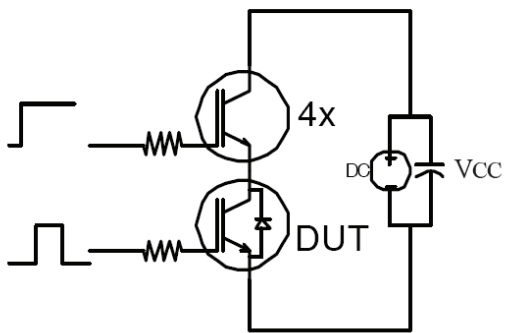
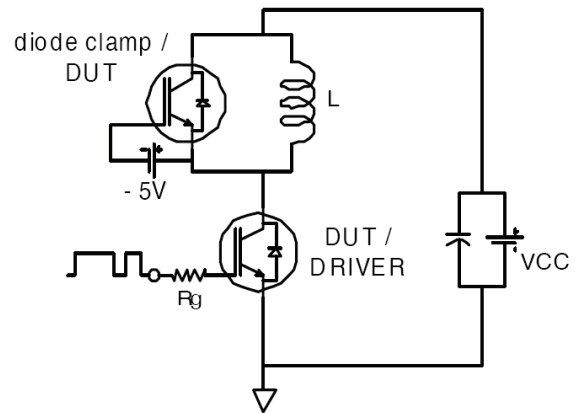
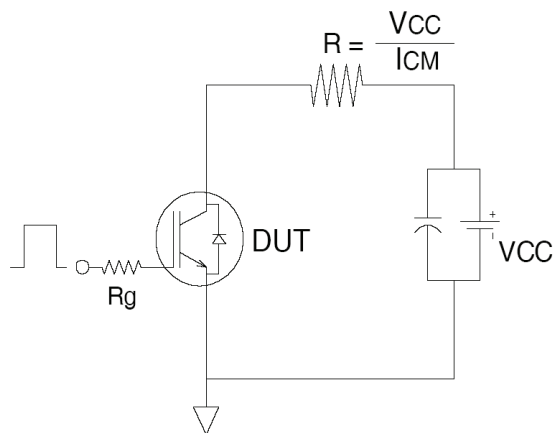


Fig 26. Maximum Transient Thermal Impedance, Junction-to-Case (DIODE)


**Fig.C.T.1 - Gate Charge Circuit (turn-off)**

**Fig.C.T.2 - RBSOA Circuit**

**Fig.C.T.3 - S.C. SOA Circuit**

**Fig.C.T.4 - Switching Loss Circuit**

**Fig.C.T.5 - Resistive Load Circuit**

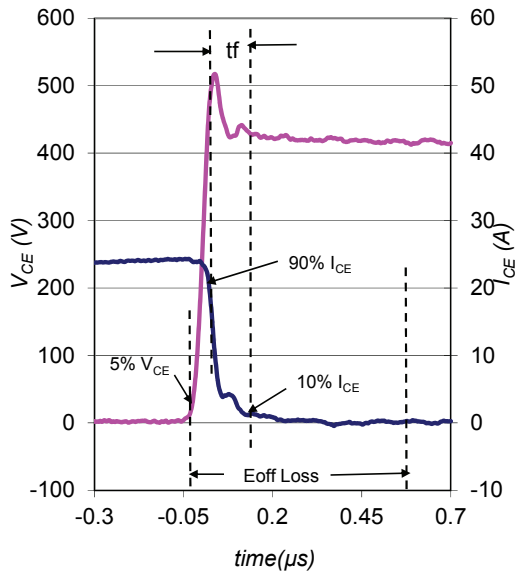


**Fig. WF1** - Typ. Turn-off Loss Waveform  
@  $T_J = 175^\circ\text{C}$  using Fig. CT.4

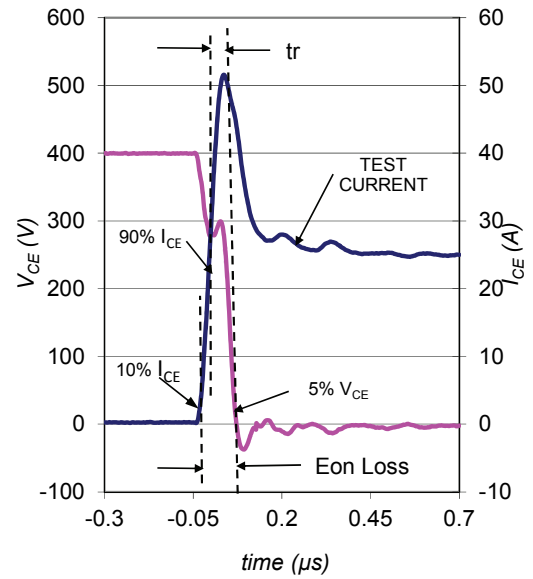


**Fig. WF2** - Typ. Turn-on Loss Waveform  
@  $T_J = 175^\circ\text{C}$  using Fig. CT.4

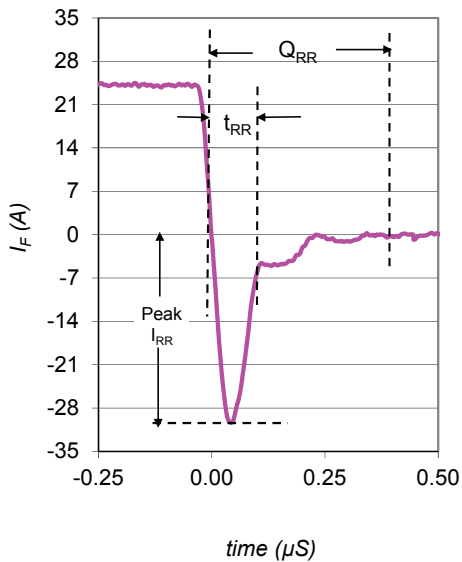


**Fig. WF3** - Typ. Diode Recovery Waveform  
@  $T_J = 175^\circ\text{C}$  using Fig. CT.4

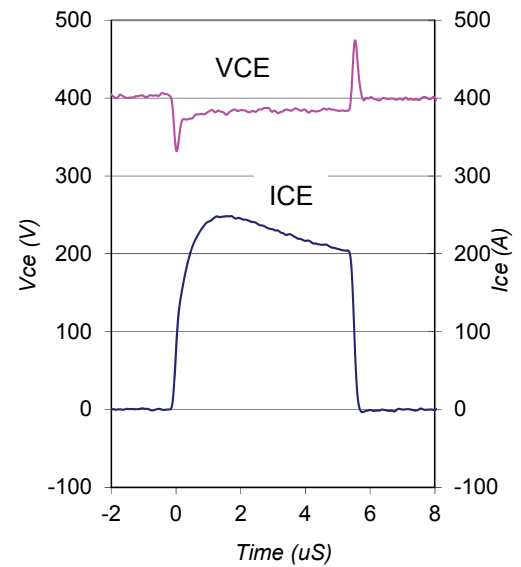
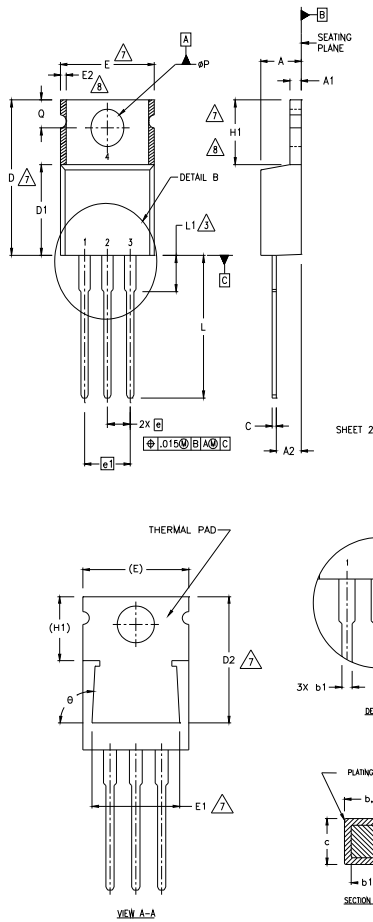


**Fig. WF4** - Typ. S.C. Waveform  
@  $T_J = 25^\circ\text{C}$  using Fig. CT.3

## TO-220AB Package Outline

(Dimensions are shown in millimeters (inches))



### NOTES:

- 1 DIMENSIONING AND TOLERANCING PER ASME Y14.5 M- 1994.
- 2 DIMENSIONS ARE SHOWN IN INCHES (MILLIMETERS).
- 3 LEAD DIMENSION AND FINISH UNCONTROLLED IN L1.
- 4 DIMENSION D & E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED .005" (0.127) PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
- 5 DIMENSION b1 & c1 APPLY TO BASE METAL ONLY.
- 6 CONTROLLING DIMENSION : INCHES.
- 7 THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS E,H1,D2 & E1
- 8 DIMENSION E2 X H1 DEFINE A ZONE WHERE STAMPING AND SINGULATION IRREGULARITIES ARE ALLOWED.

### LEAD ASSIGNMENTS

#### HEXFEET

- 1.- GATE
- 2.- DRAIN
- 3.- SOURCE

#### IGBTs, CoPACK

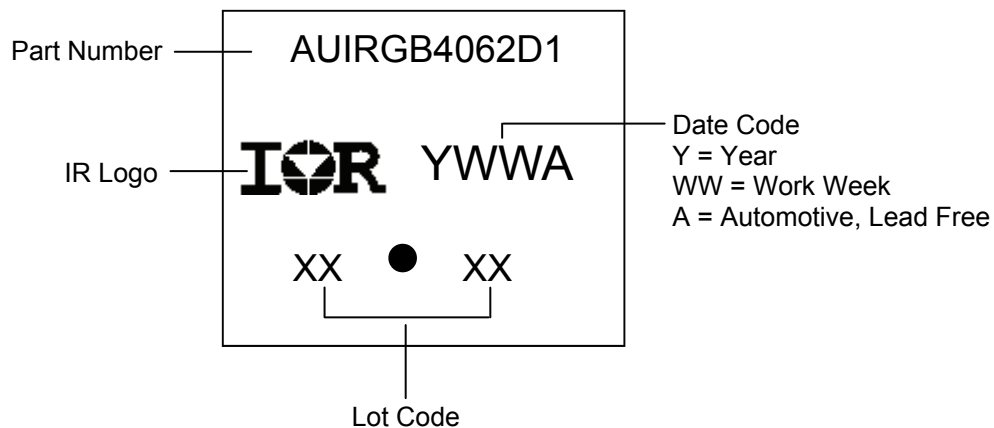
- 1.- GATE
- 2.- COLLECTOR
- 3.- EMITTER

#### DIODES

- 1.- ANODE/OPEN
- 2.- CATHODE
- 3.- ANODE

| SYMBOL | DIMENSIONS  |       |          |      | NOTES |
|--------|-------------|-------|----------|------|-------|
|        | MILLIMETERS |       | INCHES   |      |       |
|        | MIN.        | MAX.  | MIN.     | MAX. |       |
| A      | 3.56        | 4.82  | .140     | .190 | 5     |
| A1     | 0.51        | 1.40  | .020     | .055 |       |
| A2     | 2.04        | 2.92  | .080     | .115 |       |
| b      | 0.38        | 1.01  | .015     | .040 |       |
| b1     | 0.38        | 0.96  | .015     | .038 |       |
| b2     | 1.15        | 1.77  | .045     | .070 | 5     |
| b3     | 1.15        | 1.73  | .045     | .068 |       |
| c      | 0.36        | 0.61  | .014     | .024 |       |
| c1     | 0.36        | 0.56  | .014     | .022 |       |
| D      | 14.22       | 16.51 | .560     | .650 |       |
| D1     | 8.38        | 9.02  | .330     | .355 |       |
| D2     | 12.19       | 12.88 | .480     | .507 | 7     |
| E      | 9.66        | 10.66 | .380     | .420 | 4,7   |
| E1     | 8.38        | 8.89  | .330     | .350 | 7     |
| e      | 2.54 BSC    |       | .100 BSC |      | 7,8   |
| e1     | 5.08        |       | .200 BSC |      |       |
| H1     | 5.85        | 6.55  | .230     | .270 | 3     |
| L      | 12.70       | 14.73 | .500     | .580 |       |
| L1     | —           | 6.35  | —        | .250 |       |
| øP     | 3.54        | 4.08  | .139     | .161 |       |
| Q      | 2.54        | 3.42  | .100     | .135 |       |
| ø      | 90°-93°     |       | 90°-93°  |      |       |

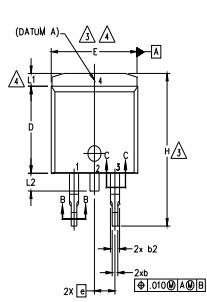
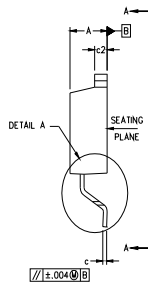
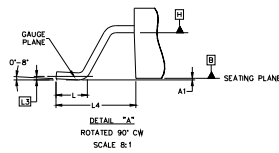
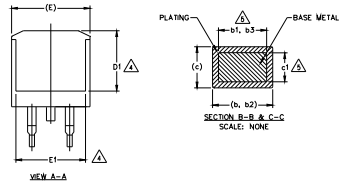
## TO-220AB Part Marking Information



TO-220AC package is not recommended for Surface Mount Application.

## D2 Pak (TO-263AB) Package Outline

(Dimensions are shown in millimeters (inches))



### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994
2. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES]
3. DIMENSION D & E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED 0.127 [0.005"] PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTMOST EXTREMES OF THE PLASTIC BODY AT DATUM H.
4. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSION E, L1, D1 & E1.
5. DIMENSION b1 AND c1 APPLY TO BASE METAL ONLY.
6. DATUM A & B TO BE DETERMINED AT DATUM PLANE H.
7. CONTROLLING DIMENSION: INCH.
8. OUTLINE CONFORMS TO JEDEC OUTLINE TO-263AB.

| SYMBOL | DIMENSIONS  |       |          |      | NOTES |
|--------|-------------|-------|----------|------|-------|
|        | MILLIMETERS |       | INCHES   |      |       |
|        | MIN.        | MAX.  | MIN.     | MAX. |       |
|        |             |       |          |      |       |
| A      | 4.06        | 4.83  | .160     | .190 | 5     |
| A1     | 0.00        | 0.254 | .000     | .010 |       |
| b      | 0.51        | 0.99  | .020     | .039 |       |
| b1     | 0.51        | 0.89  | .020     | .035 |       |
| b2     | 1.14        | 1.78  | .045     | .070 |       |
| b3     | 1.14        | 1.73  | .045     | .068 | 5     |
| c      | 0.38        | 0.74  | .015     | .029 | 5     |
| c1     | 0.38        | 0.58  | .015     | .023 |       |
| c2     | 1.14        | 1.65  | .045     | .065 |       |
| D      | 8.38        | 9.65  | .330     | .380 | 3     |
| D1     | 6.86        | —     | .270     | —    | 4     |
| E      | 9.65        | 10.67 | .380     | .420 | 3,4   |
| E1     | 6.22        | —     | .245     | —    | 4     |
| e      | 2.54 BSC    |       | .100 BSC |      | 4     |
| H      | 14.61       | 15.88 | .575     | .625 |       |
| L      | 1.78        | 2.79  | .070     | .110 |       |
| L1     | —           | 1.65  | —        | .066 |       |
| L2     | 1.27        | 1.78  | —        | .070 |       |
| L3     | 0.25 BSC    |       | .010 BSC |      |       |
| L4     | 4.78        | 5.28  | .188     | .208 |       |

### LEAD ASSIGNMENTS

#### HEXFET

- 1.— GATE
- 2, 4.— DRAIN
- 3.— SOURCE

#### IGBTs, CoPACK

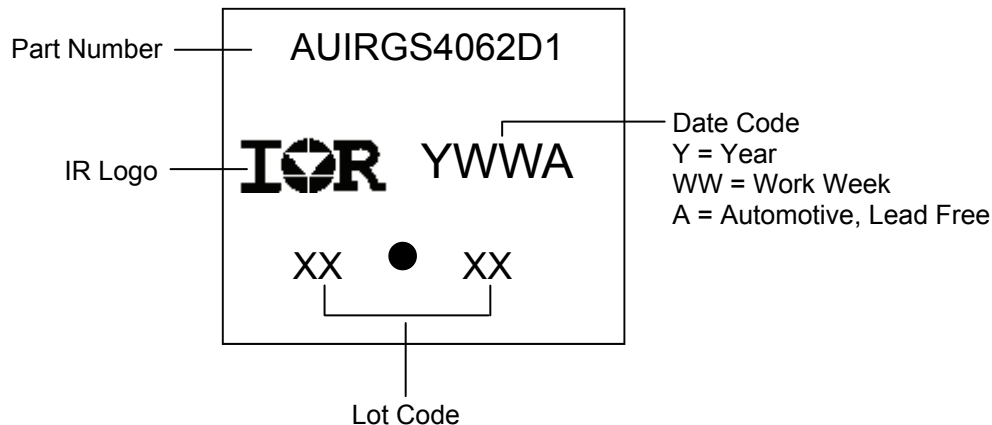
- 1.— GATE
- 2, 4.— COLLECTOR
- 3.— EMITTER

#### DIODES

- 1.— ANODE \*
- 2, 4.— CATHODE
- 3.— ANODE

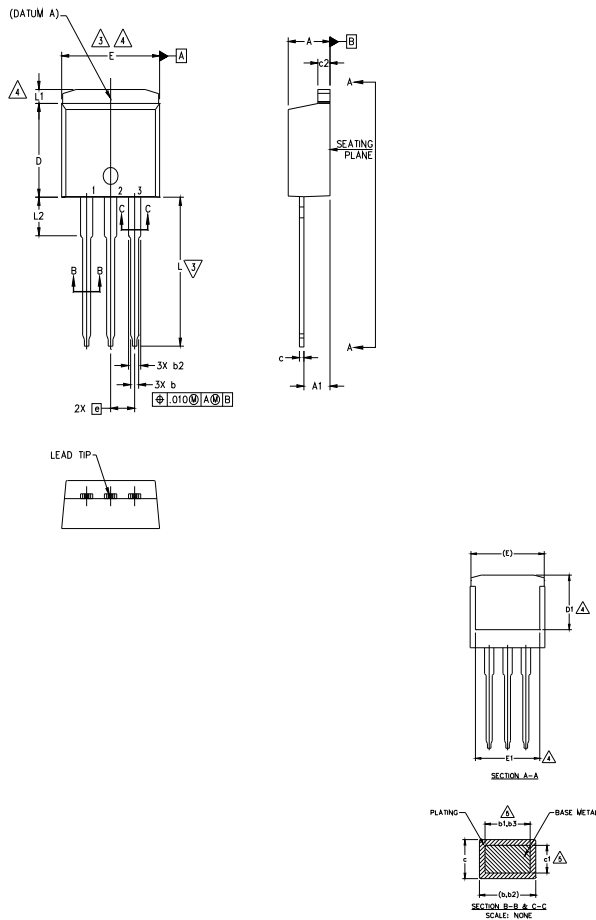
\* PART DEPENDENT.

## D2 Pak (TO-263AB) Part Marking Information



## TO-262 Package Outline

(Dimensions are shown in millimeters (inches))



### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994
2. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
3. DIMENSION D & E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED 0.127 [0.005"] PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTMOST EXTREMES OF THE PLASTIC BODY.
4. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSION E, L1, D1 & E1.
5. DIMENSION b1 AND c1 APPLY TO BASE METAL ONLY.
6. CONTROLLING DIMENSION: INCH.
7. OUTLINE CONFORM TO JEDEC TO-262 EXCEPT A1(max.), b(min.) AND D1(min.) WHERE DIMENSIONS DERIVED THE ACTUAL PACKAGE OUTLINE.

| SYMBOL | DIMENSIONS  |       |          |      | NOTES |
|--------|-------------|-------|----------|------|-------|
|        | MILLIMETERS |       | INCHES   |      |       |
|        | MIN.        | MAX.  | MIN.     | MAX. |       |
| A      | 4.06        | 4.83  | .160     | .190 |       |
| A1     | 2.03        | 3.02  | .080     | .119 |       |
| b      | 0.51        | 0.99  | .020     | .039 |       |
| b1     | 0.51        | 0.89  | .020     | .035 | 5     |
| b2     | 1.14        | 1.78  | .045     | .070 |       |
| b3     | 1.14        | 1.73  | .045     | .068 | 5     |
| c      | 0.38        | 0.74  | .015     | .029 |       |
| c1     | 0.38        | 0.58  | .015     | .023 | 5     |
| c2     | 1.14        | 1.65  | .045     | .065 |       |
| D      | 8.38        | 9.65  | .330     | .380 | 3     |
| D1     | 6.86        | —     | .270     | —    | 4     |
| E      | 9.65        | 10.67 | .380     | .420 | 3, 4  |
| E1     | 6.22        | —     | .245     | —    | 4     |
| e      | 2.54 BSC    |       | .100 BSC |      |       |
| L      | 13.46       | 14.10 | .530     | .555 |       |
| L1     | —           | 1.65  | —        | .065 | 4     |
| L2     | 3.56        | 3.71  | .140     | .146 |       |

### LEAD ASSIGNMENTS

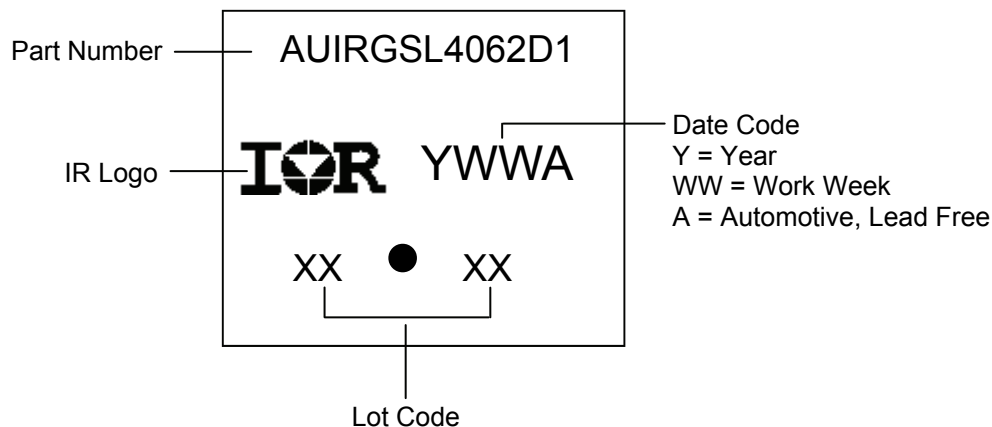
#### HEXFET

1. GATE
2. DRAIN
3. SOURCE
4. DRAIN

#### IGBTs, CoPACK

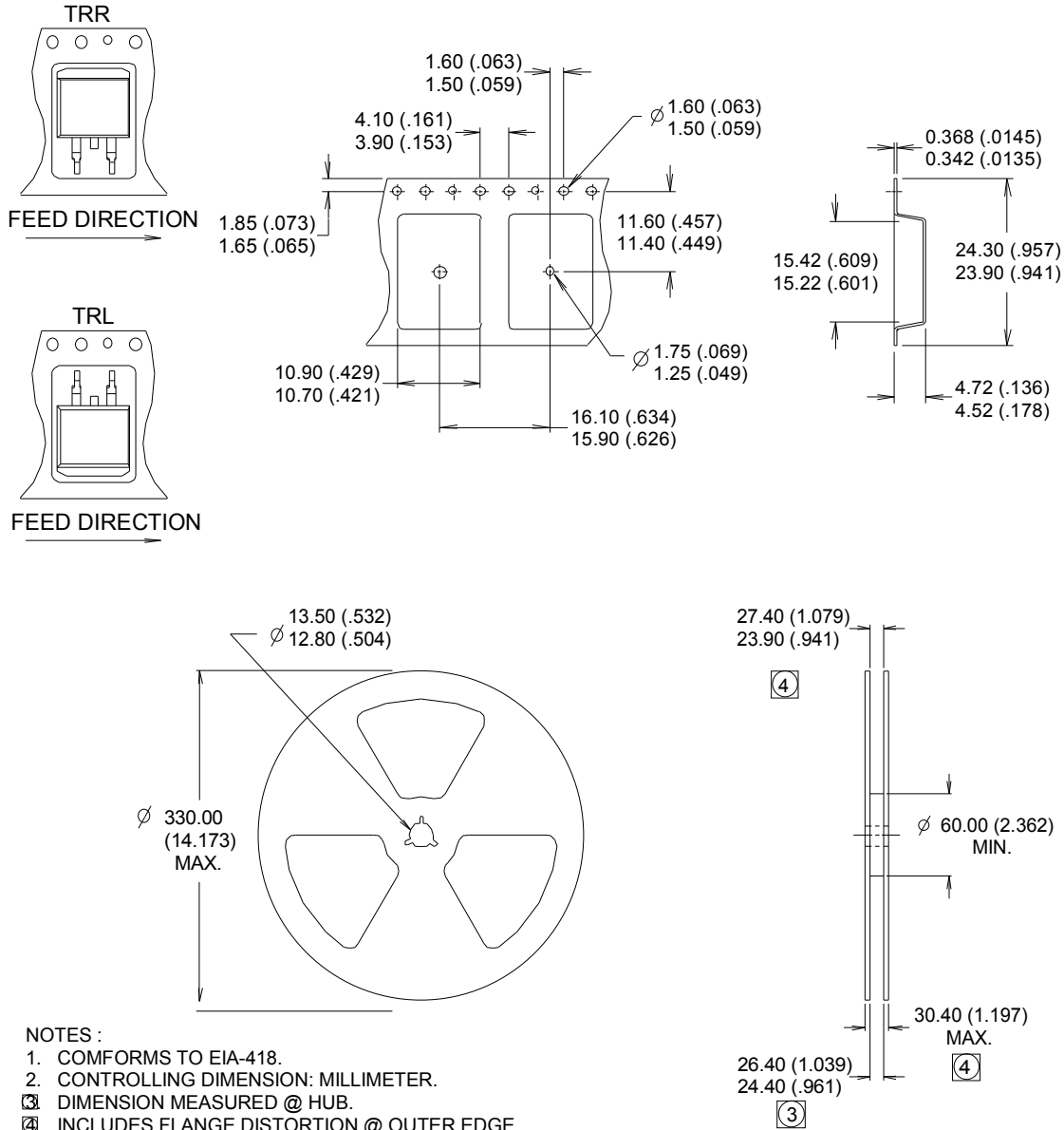
1. GATE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

## TO-262 Part Marking Information



## D2Pak Tape & Reel Information

(Dimensions are shown in millimeters (inches))



**Qualification Information**

|                                   |                      |                                                                                                                                                                     |      |
|-----------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Qualification Level</b>        |                      | Automotive<br>(per AEC-Q101)                                                                                                                                        |      |
|                                   |                      | This part number(s) passed Automotive qualification. Infineon's Industrial and Consumer qualification level is granted by extension of the higher Automotive level. |      |
| <b>Moisture Sensitivity Level</b> |                      | 3L-TO-220                                                                                                                                                           | N/A  |
|                                   |                      | 3L-TO-262                                                                                                                                                           |      |
|                                   |                      | 3L-D2 PAK                                                                                                                                                           | MSL1 |
| <b>ESD</b>                        | Machine Model        | Class M4(+/- 700V) <sup>†</sup><br>AEC-Q101-002                                                                                                                     |      |
|                                   | Human Body Model     | Class H1C(+/- 2000V) <sup>†</sup><br>AEC-Q101-001                                                                                                                   |      |
|                                   | Charged Device Model | Class C5 (+/- 2000V) <sup>†</sup><br>AEC-Q101-005                                                                                                                   |      |
| <b>RoHS Compliant</b>             |                      | Yes                                                                                                                                                                 |      |

† Highest passing voltage.

**Revision History**

| Date      | Comments                                                                                                                                       |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 8/31/2017 | <ul style="list-style-type: none"> <li>Updated datasheet with corporate template</li> <li>Corrected part marking on pages 10,11, 12</li> </ul> |

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