

Product Summary

- $BV_{CEO} > 17.5V$
- $I_{C(cont)} = 5A$
- $V_{CE(sat)} < 75mV @ 1A$
- $P_D = 2.75W$

Descriptions

Advanced process capability has been used to achieve this high-performance device. Combining two NPN transistors in the SM-8 package provides a compact solution for the intended applications.

Applications

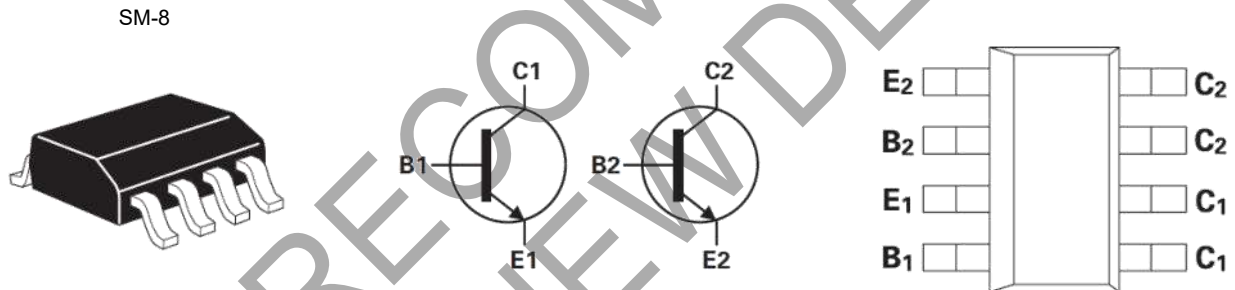
- CCFL inverters
- Royer circuits

Features

- Dual NPN Device
- Very Low Saturation Voltage
- High Gain
- SM-8 Package
- For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](#) or your local Diodes representative.
<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

- Package: SM-8
- Package Material: Molded Plastic, UL Flammability Rating 94V-0
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (63)
- Weight: 0.117 grams (Approximate)
- Max Soldering Temperature +260°C for 30 secs as per JEDEC J-STD-020



Ordering Information (Note 1)

Orderable Part Number	Package	Reel Size (inches)	Tape Width (mm)	Packing	
				Qty.	Carrier
ZDT1048TA	SM-8	7	12	1000	Reel

Note: 1. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CB0}	50	V
Collector-Emitter Voltage	V_{CEO}	17.5	V
Emitter-Base Voltage	V_{EBO}	5	V
Peak Pulse Current	I_{CM}	20	A
Continuous Collector Current	I_C	5	A
Base Current	I_B	500	mA
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Total Power Dissipation at $T_{amb} = +25^{\circ}\text{C}$ (Note 2)	P_{tot}	2.25	W
Any Single Die "On"		2.75	W
Both Die "On" Equally			
Derate Above +25°C (Note 2)	—	18	mW/°C
Any Single Die "On"		22	mW/°C
Both Die "On" Equally			
Thermal Resistance - Junction to Ambient (Note 2)	—	55.6	°C/W
Any Single Die "On"		45.5	°C/W
Both Die "On" Equally			

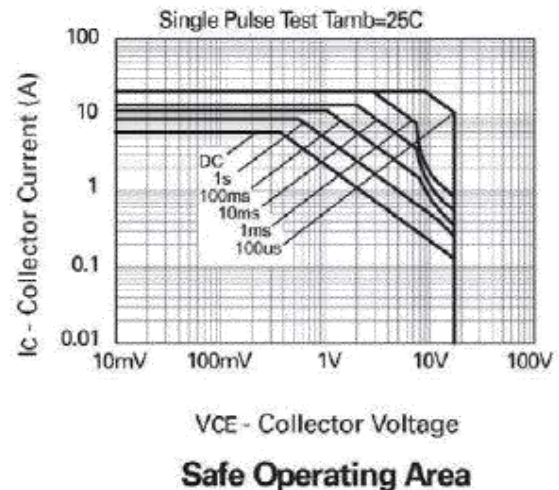
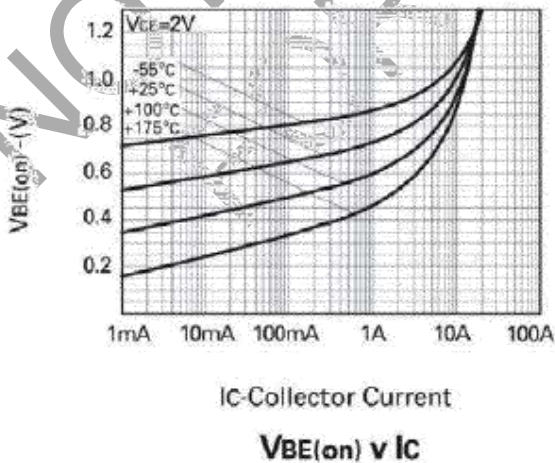
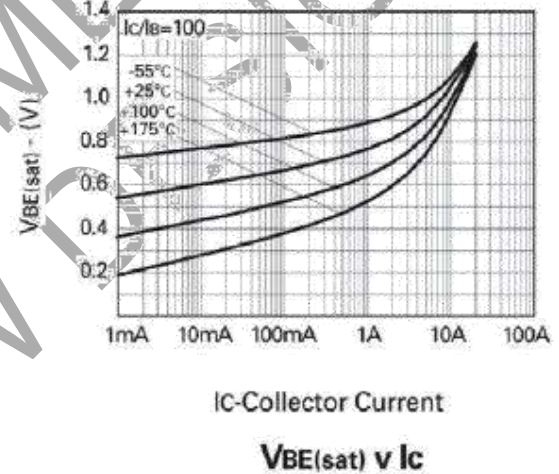
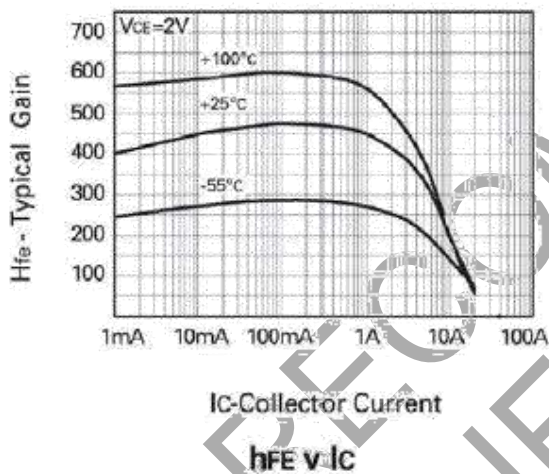
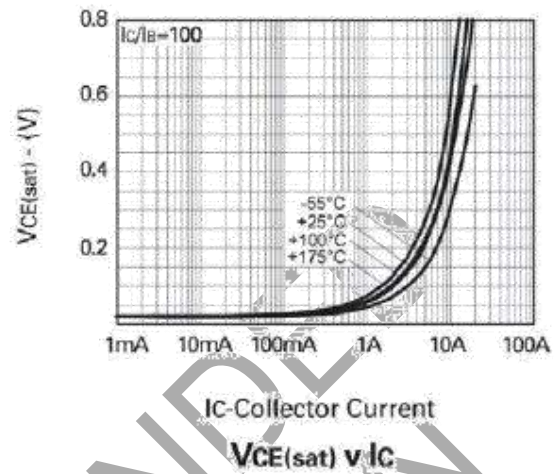
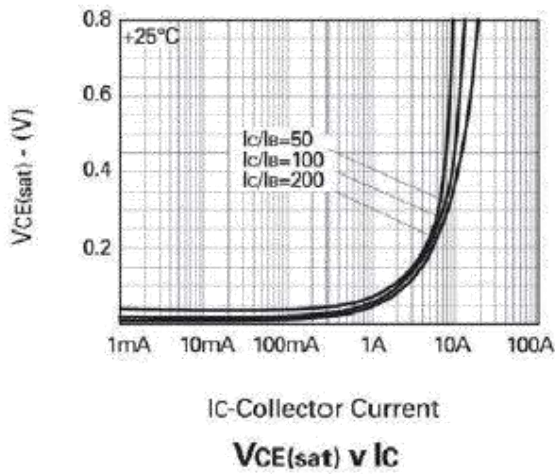
Note: 2. The power which can be dissipated assuming the device is mounted in a typical manner on a PCB with copper equal to 2 inches square.

Electrical Characteristics (@ $T_{amb} = +25^{\circ}\text{C}$, unless otherwise stated).

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	50	85	—	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	V_{CES}	50	85	—	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	V_{CEO}	17.5	24	—	V	$I_C = 10\text{mA}$
Collector-Emitter Breakdown Voltage	V_{CEV}	50	85	—	V	$I_C = 100\mu\text{A}, V_{EB} = 1\text{V}$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	8.7	—	V	$I_E = 100\mu\text{A}$
Collector Cutoff Current	I_{CBO}	—	0.3	10	nA	$V_{CB} = 35\text{V}$
Emitter Cutoff Current	I_{EBO}	—	0.3	10	nA	$V_{EB} = 4\text{V}$
Collector-Emitter Cutoff Current	I_{CES}	—	0.3	10	nA	$I_{CES} = 35\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	27	45	mV	$I_C = 0.5\text{A}, I_B = 10\text{mA}$ (Note 3)
			55	75	mV	$I_C = 1\text{A}, I_B = 10\text{mA}$ (Note 3)
			120	160	mV	$I_C = 2\text{A}, I_B = 10\text{mA}$ (Note 3)
			200	240	mV	$I_C = 5\text{A}, I_B = 100\text{mA}$ (Note 3)
			200	300	mV	$I_C = 5\text{A}, I_B = 50\text{mA}$ (Note 3)
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	1000	1100	mV	$I_C = 5\text{A}, I_B = 100\text{mA}$ (Note 3)
Base-Emitter Turn-On Voltage	$V_{BE(on)}$	—	900	1000	mV	$I_C = 5\text{A}, V_{CE} = 2\text{V}$ (Note 3)
Static Forward Current Transfer Ratio	h_{FE}	280	440	1200	—	$I_C = 10\text{mA}, V_{CE} = 2\text{V}$ (Note 3)
		300	450			$I_C = 0.5\text{A}, V_{CE} = 2\text{V}$ (Note 3)
		300	450			$I_C = 1\text{A}, V_{CE} = 2\text{V}$ (Note 3)
		250	300			$I_C = 5\text{A}, V_{CE} = 2\text{V}$ (Note 3)
		50	80			$I_C = 20\text{A}, V_{CE} = 2\text{V}$ (Note 3)
Transition Frequency	f_T	—	150	—	MHz	$I_C = 50\text{mA}, V_{CE} = 10\text{V}, f = 50\text{MHz}$
Output Capacitance	C_{obo}	—	60	80	pF	$V_{CB} = 10\text{V}, f = 1\text{MHz}$
Switching Times	t_{on}	—	120	—	ns	$I_C = 4\text{A}, I_B = 40\text{mA}, V_{CC} = 10\text{V}$
	t_{off}	—	250	—	ns	$I_C = 4\text{A}, I_B = \pm 40\text{mA}, V_{CC} = 10\text{V}$

Note: 3. Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$.

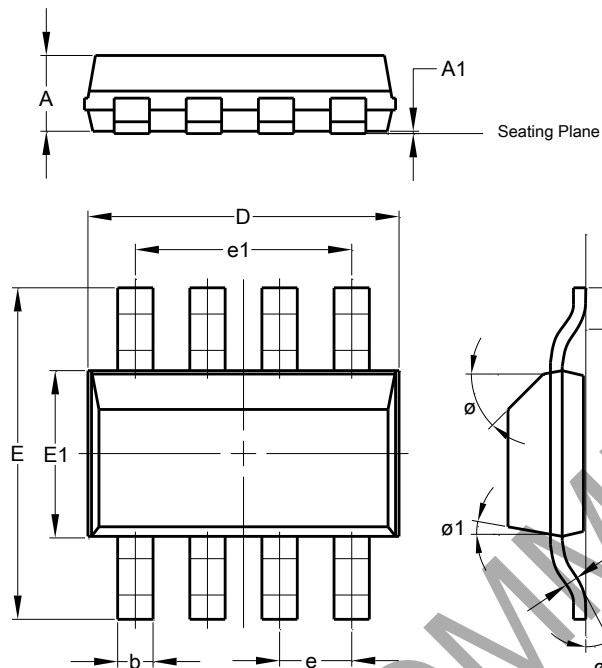
Typical Characteristics



Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SM-8

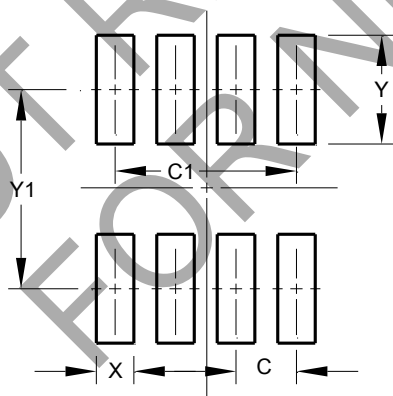


SM-8			
Dim	Min	Max	Typ
A	--	1.70	1.60
A1	0.02	0.10	0.04
b	0.70	0.90	0.80
c	0.24	0.32	0.28
D	6.30	6.70	6.60
e	1.53 REF		
e1	4.59 REF		
E	6.70	7.30	7.00
E1	3.30	3.70	3.50
L	0.75	1.00	0.90
Ø	--	--	45°
Ø1	--	15°	--
Ø2	--	--	10°
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SM-8



Dimensions	Value (in mm)
C	1.52
C1	4.60
X	0.95
Y	2.80
Y1	6.80

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