Features

- Trench MV MOSFET Technology
- Moisture Sensitivity Level 1
- Halogen Free. “Green” Device (Note 1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Dual N&P-Channel MOSFET

Maximum Ratings

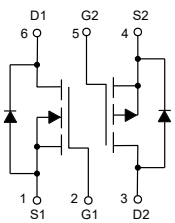
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 320°C/W Junction to Ambient(Note2)

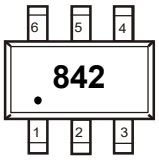
Parameter		Symbol	Rating	Unit
Total Power Dissipation(Note 4)		P_D	390	mW
N-Channel MOSFET				
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Volltage		V_{GS}	±20	V
Continuous Drain Current	T_A=25°C	I_D	115	mA
	T_A=100°C		72	
Pulsed Drain Current (Note 3)		I_{DM}	460	mA
P-Channel MOSFET				
Drain-Source Voltage		V_{DS}	-50	V
Gate-Source Volltage		V_{GS}	±20	V
Continuous Drain Current	T_A=25°C	I_D	-130	mA
	T_A=100°C		-82	
Pulsed Drain Current (Note 3)		I_{DM}	-520	mA

Note:

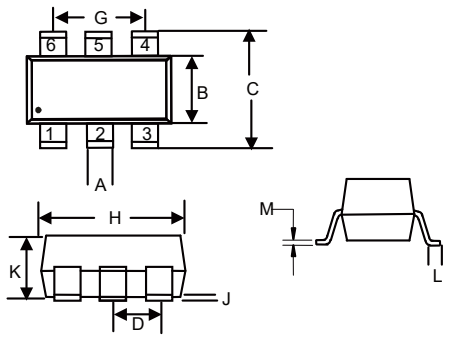
1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction-ambient thermal resistance.

Internal Structure and Marking Code



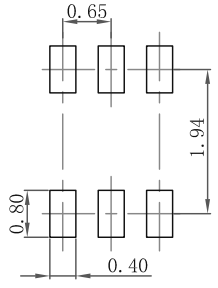


SOT-363



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.006	0.014	0.15	0.35	
B	0.045	0.053	1.15	1.35	
C	0.079	0.096	2.00	2.45	
D	0.026		0.65		TYP.
G	0.047	0.055	1.20	1.40	
H	0.071	0.087	1.80	2.20	
J	-----	0.004	-----	0.10	
K	0.031	0.043	0.80	1.10	
L	0.010	0.018	0.26	0.46	
M	0.003	0.006	0.08	0.15	

Suggested Solder Pad Layout



N-Channel Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=10μA	60			V
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			80	nA
		V_{DS}=60V, V_{GS}=0V, T_J=125°C			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.0	1.6	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=500mA		1.2	2	Ω
		V_{GS}=5V, I_D=50mA		1.3	3	
Forward Transconductance	g_{fs}	V_{DS}=10V, I_D=200mA		300		mS
Gate Resistance	R_g	f=1 MHz, Open drain		4		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				115	mA
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=115mA			1.5	V
Reverse Recovery Time	t_{rr}	I_F=0.5A, dI_F/dt=100A/μs		9.4		ns
Reverse Recovery Charge	Q_{rr}			3.1		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V,f=1MHz		25.2		pF
Output Capacitance	C_{oss}			3.5		
Reverse Transfer Capacitance	C_{rss}			2.2		
Total Gate Charge	Q_g	V_{DS}=25V,V_{GS}=10V,I_D=0.5A		1.1		nC
Gate-Source Charge	Q_{gs}			0.2		
Gate-Drain Charge	Q_{gd}			0.25		
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=25V, V_{GS}=10V, R_G=25Ω, I_{DS}=0.5A		2.3		ns
Turn-On Rise Time	t_r			2.7		
Turn-Off Delay Time	$t_{d(off)}$			6.3		
Turn-Off Fall Time	t_f			3		

P-Channel Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=-250μA	-50			V
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS} =±20V			±5	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-50V, V_{GS}=0V			-1	μA
		V_{DS}=-25V, V_{GS}=0V			-0.1	
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.9	-1.4	-2.0	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-10V, I_D=-0.1A		2.8	8	Ω
		V_{GS}=-5V, I_D=-0.1A		3.2	10	
Forward Transconductance	g_{fs}	V_{DS} =-5V, I_D =-0.13A		220		mS
Gate Resistance	R_g	f=1 MHz, Open drain		25		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				-0.13	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=-0.13A			-2.2	V
Reverse Recovery Time	t_{rr}	I_F=-0.15A,di/dt=100A/μs		10		ns
Reverse Recovery Charge	Q_{rr}			4		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-25V,V_{GS}=0V,f=1MHz		27		pF
Output Capacitance	C_{oss}			6		
Reverse Transfer Capacitance	C_{rss}			4		
Total Gate Charge	Q_g	V_{DS}=-25V,V_{GS}=-10V,I_D=-0.15A		2.4		nC
Gate-Source Charge	Q_{gs}			0.4		
Gate-Drain Charge	Q_{gd}			0.4		
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=-30V, V_{GS}=-10V, R_G=2.5Ω, I_D=-0.15A		9		ns
Turn-On Rise Time	t_r			4		
Turn-Off Delay Time	$t_{d(off)}$			46		
Turn-Off Fall Time	t_f			24		

Curve Characteristics(N-Channel)

Fig.1 - Typical Output Characteristics

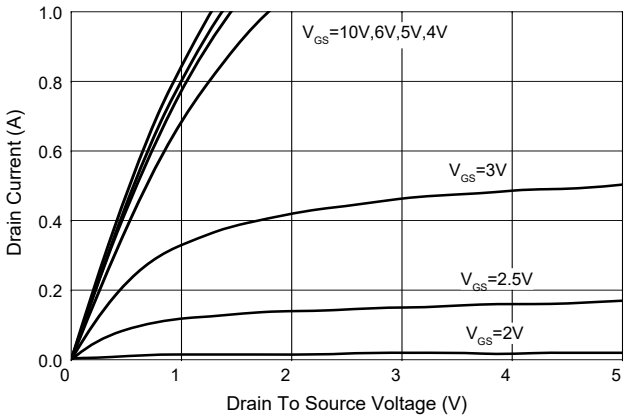


Fig.2 - Transfer Characteristic

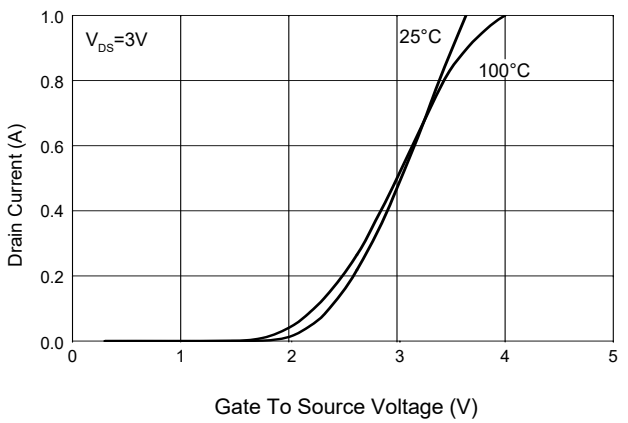


Fig.3 - $R_{DS(ON)}$ - V_{GS}

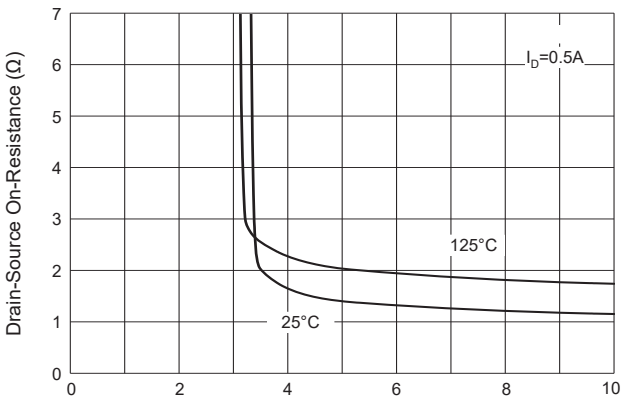


Fig.4 - $R_{DS(ON)}$ - I_D

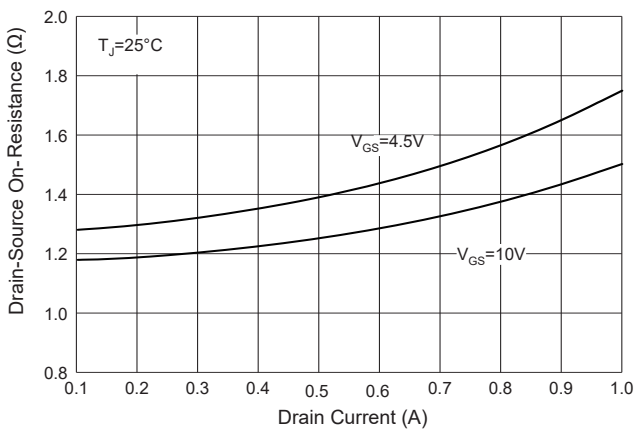


Fig.5 - Capacitance Characteristics

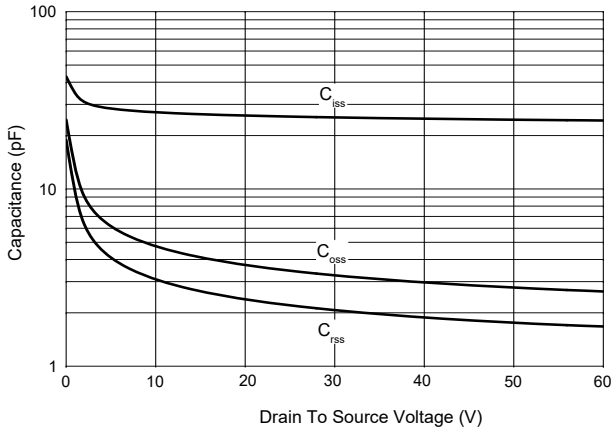
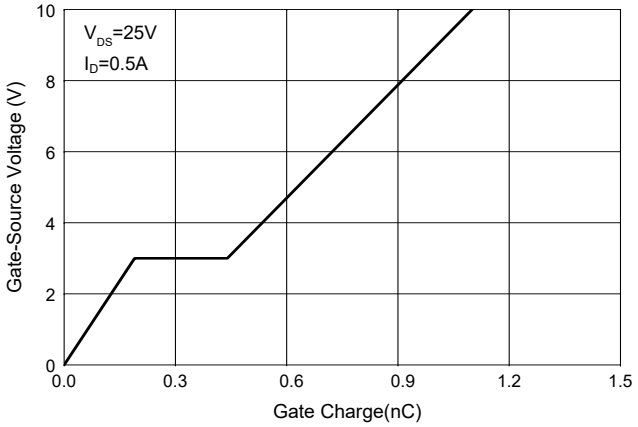


Fig.6 - Gate Charge



Curve Characteristics(N-Channel)

Fig.7 - Normalized Threshold Voltage

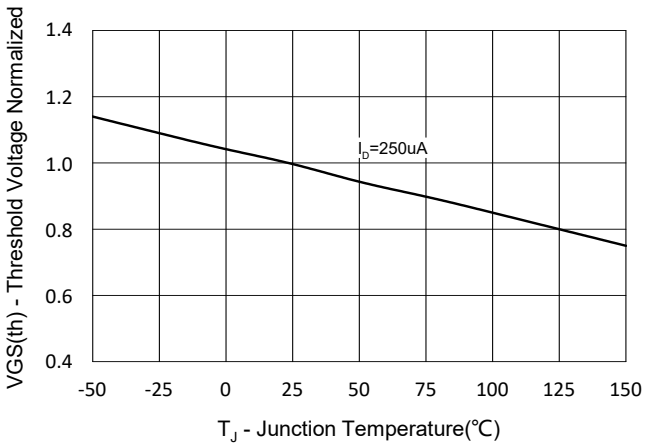


Fig.8 - Normalized On Resistance Characteristics

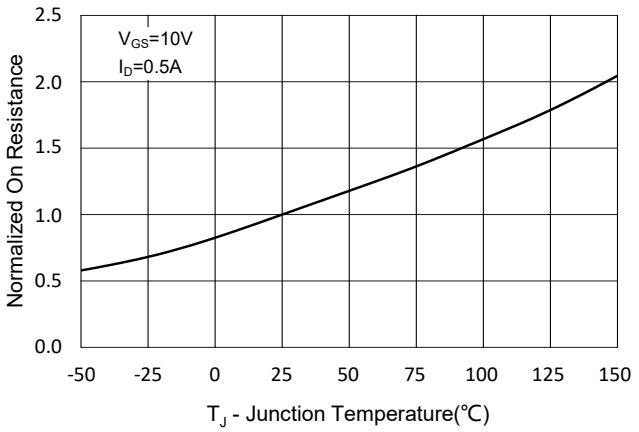


Fig.9 - I_S - V_{SD}

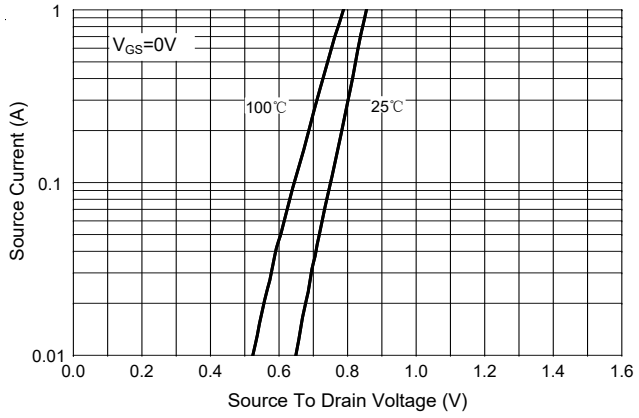


Fig.10 - Drain Current

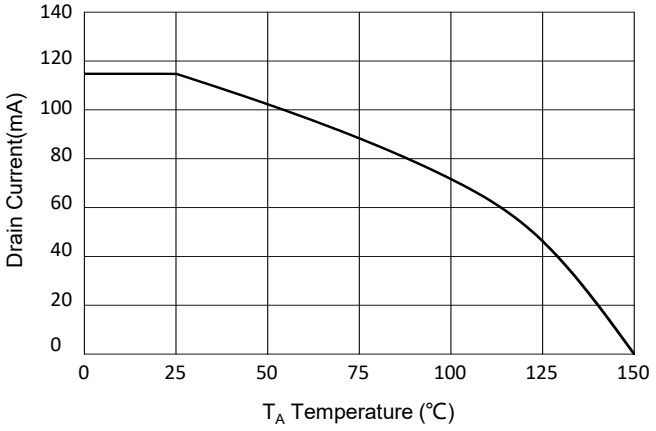
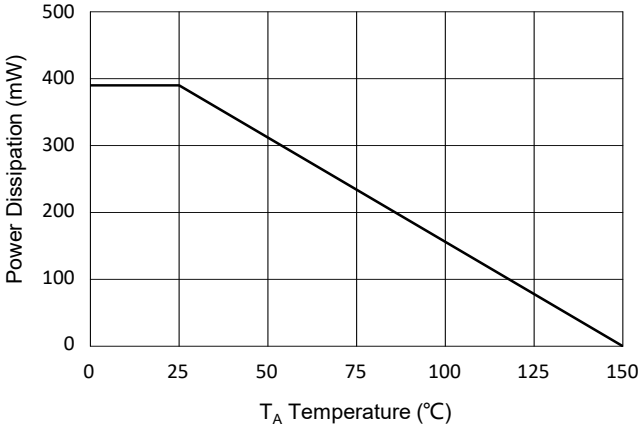


Fig.11 - PD Dissipation



Curve Characteristics(N-Channel)

Fig.12 - Safe Operation Area

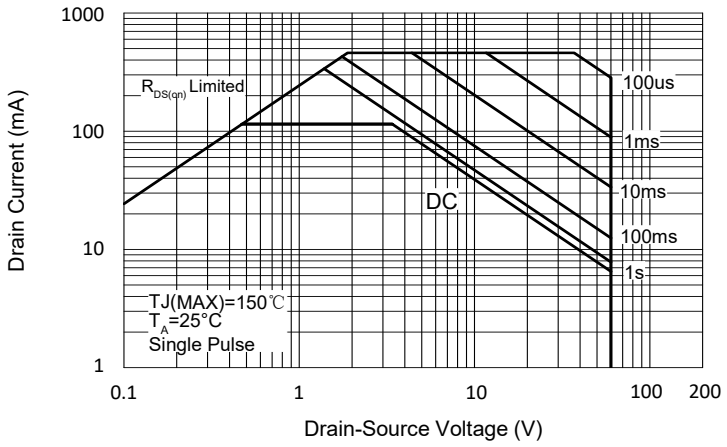
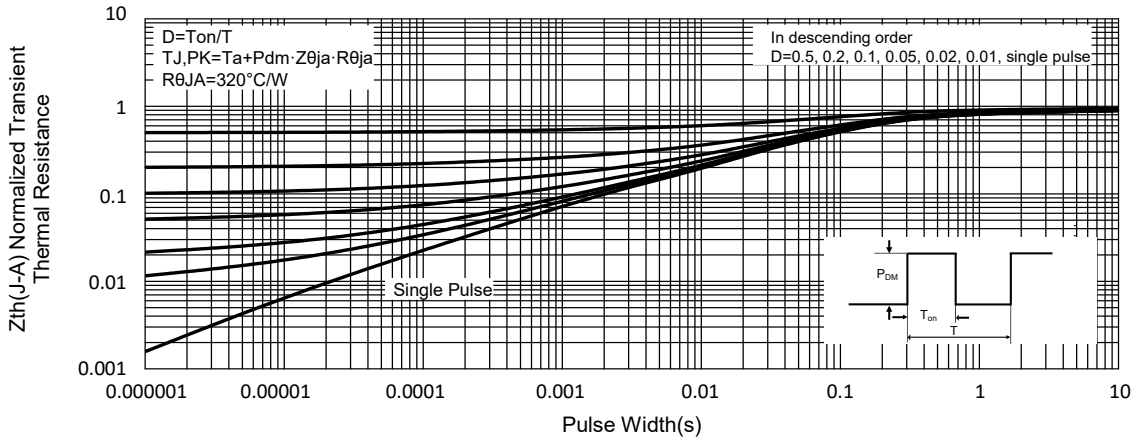


Fig.13 - Normalized Transient Thermal Impedance



Curve Characteristics(P-Channel)

Fig. 1 - Typical Output Characteristics

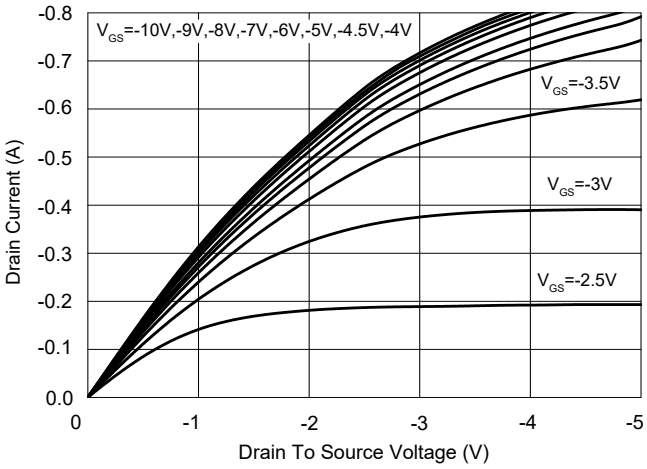


Fig. 2 - Transfer Characteristics

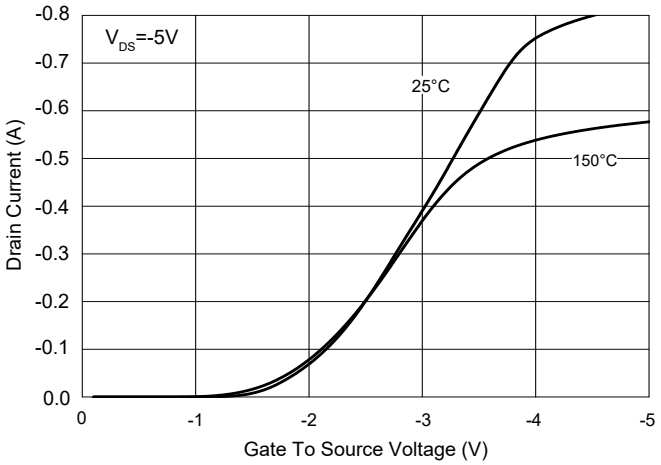


Fig.3 Rdson-Vgs

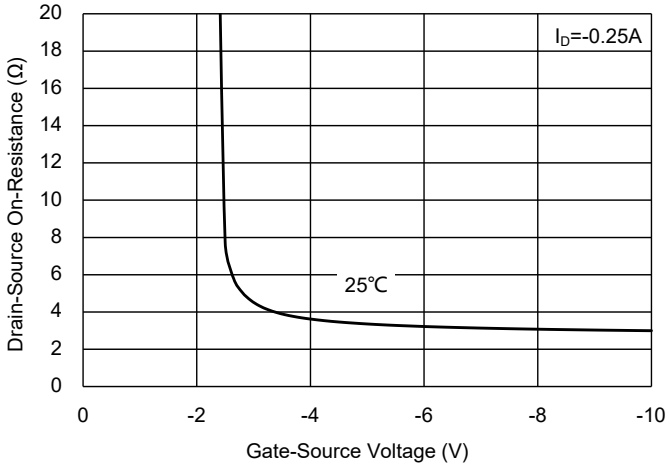


Fig.4 RDS(ON)-ID

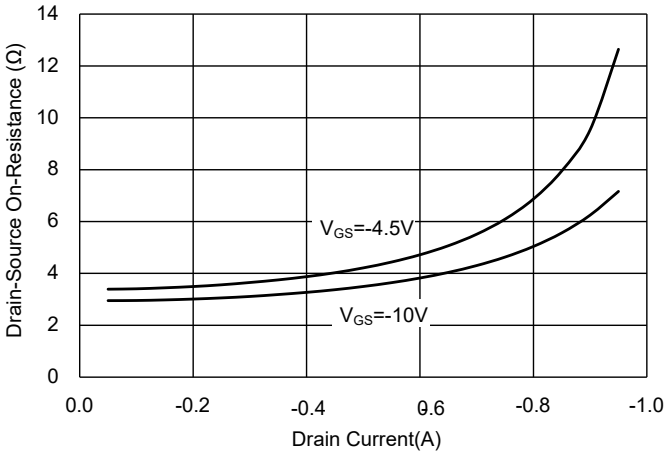


Fig. 5 - Capacitance Characteristics

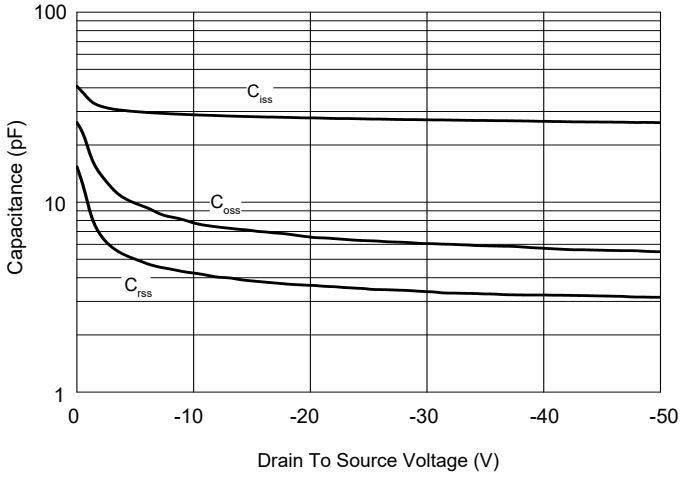
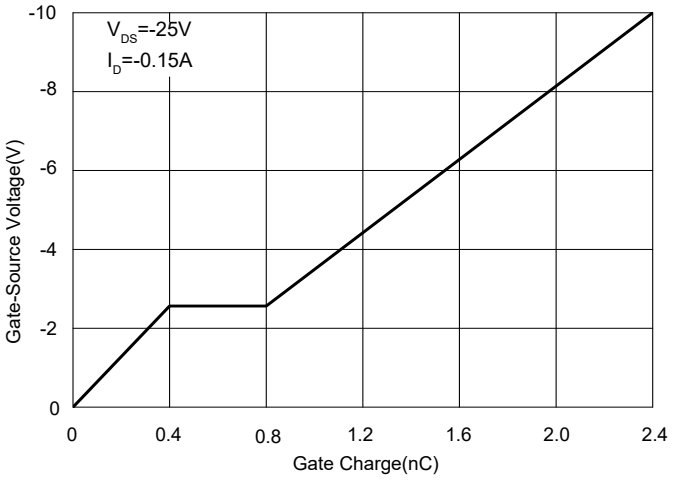


Fig.6 Gate Charge



Curve Characteristics(P-Channel)

Fig.7 - Normalized Threshold Voltage

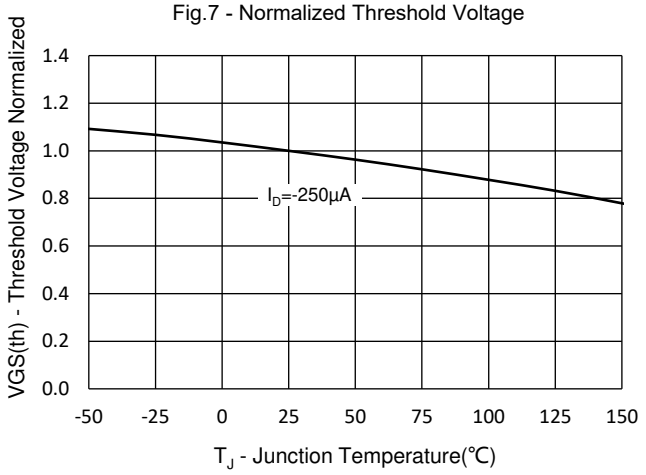


Fig.8 - Normalized On Resistance Characteristics

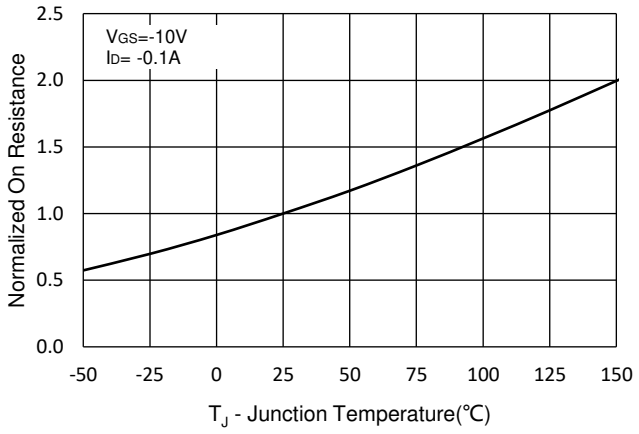


Fig.9 IS-VSD

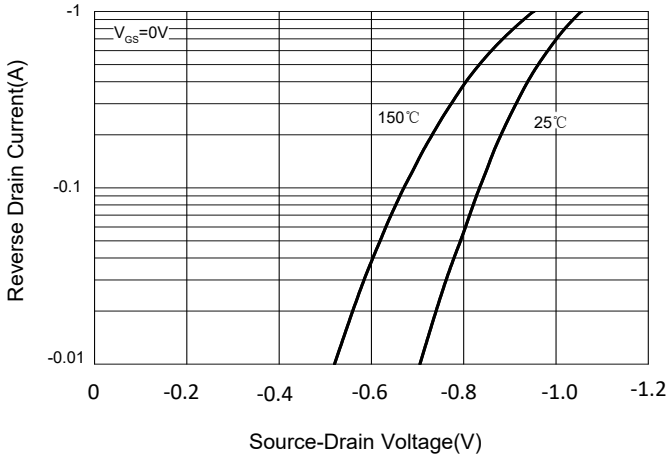


Fig. 10 - Drain Current

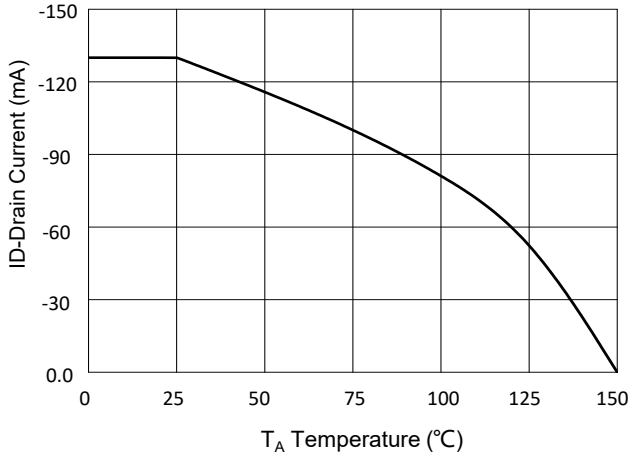
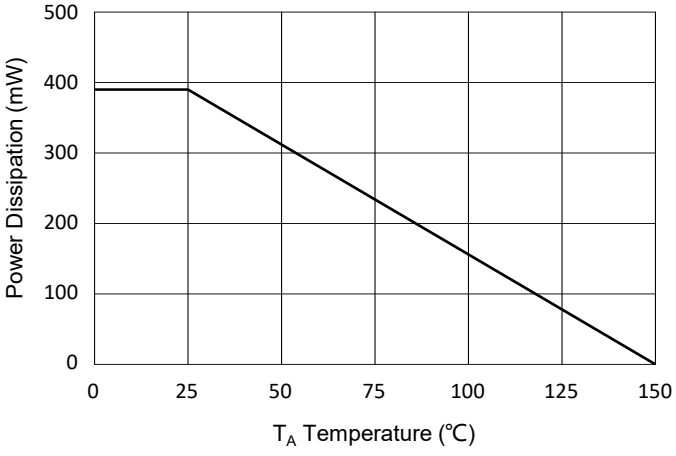


Fig.11 - PD Dissipation



Curve Characteristics(P-Channel)

Fig.12 - Safe Operation Area

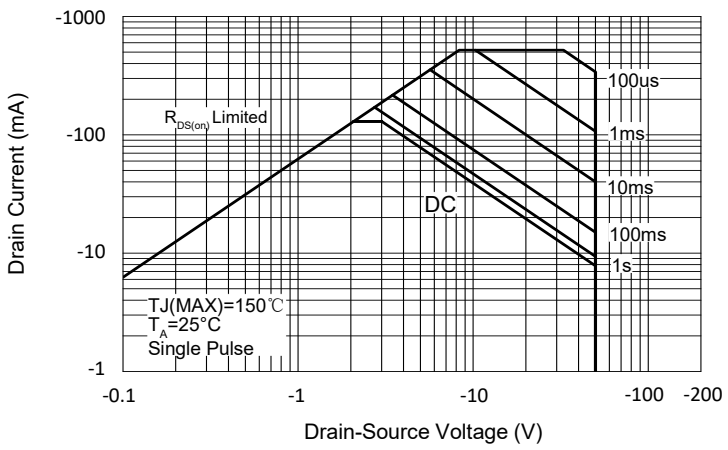
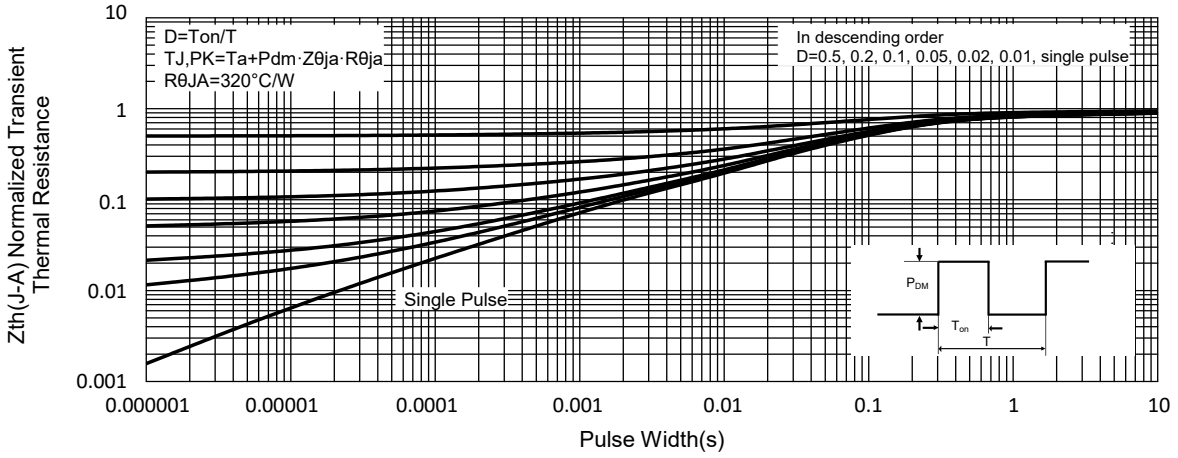


Fig.13 Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

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