Features

- ESD Protected Up To 1.5KV (HBM)
- Extremely Low Threshold Voltage
- Moisture Sensitivity Level 1
- Halogen Free. “Green” Device (Note1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

N-CHANNEL MOSFET

Maximum Ratings

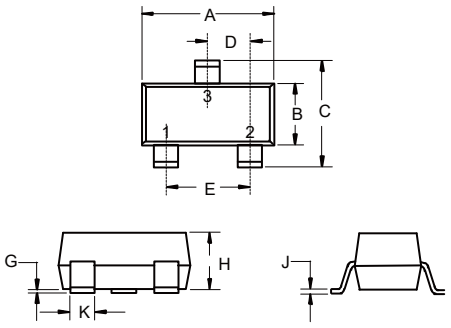
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 441°C/W Junction to Ambient(Note2)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	50	V
Gate-Source Volltage		V_{GS}	±20	V
Continuous Drain Current	T_A=25°C	I_D	0.25	A
	T_A=100°C		0.16	
Pulsed Drain Current (Note3)		I_{DM}	1	A
Total Power Dissipation (Note4)		P_D	0.28	W

Note:

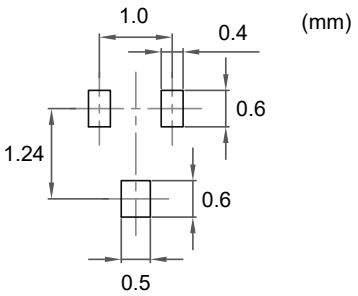
1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =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.

SOT-523

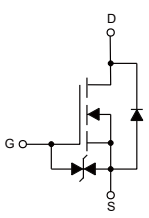


DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.059	0.067	1.50	1.70	
B	0.030	0.033	0.75	0.85	
C	0.057	0.069	1.45	1.75	
D	0.020		0.50		TYP.
E	0.035	0.043	0.90	1.10	
G	0.000	0.004	0.00	0.10	
H	0.024	0.031	0.60	0.80	
J	0.004	0.008	0.10	0.20	
K	0.006	0.014	0.15	0.35	

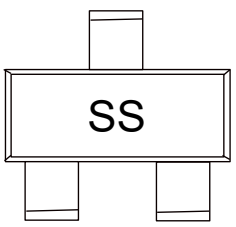
Suggested Solder Pad Layout



Internal Structure and Marking Code



1. GATE
2. SOURCE
3. DRAIN



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			±10	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=50V, V_{GS}=0V			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.5	1.0	1.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=0.5A		1.1	1.6	Ω
		V_{GS}=4.5V, I_D=0.2A		1.2	2.5	
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=0.2A		510		mS
Gate Resistance	R_g	f=1 MHz, Open drain		75		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				0.25	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=0.2A			1.3	V
Reverse Recovery Time	t_{rr}	I_S=0.5A,di/dt=100A/μs		9.2		ns
Reverse Recovery Charge	Q_{rr}			2.1		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V,f=1MHz		29		pF
Output Capacitance	C_{oss}			4.3		
Reverse Transfer Capacitance	C_{rss}			2.7		
Total Gate Charge	Q_g	V_{DS}=25V,V_{GS}=10V,I_D=0.5A		1.2		nC
Gate-Source Charge	Q_{gs}			0.15		
Gate-Drain Charge	Q_{gd}			0.31		
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=25V, V_{GS}=10V, R_G=25Ω, I_{DS}=0.5A		3		ns
Turn-On Rise Time	t_r			2.7		
Turn-Off Delay Time	$t_{d(off)}$			11		
Turn-Off Fall Time	t_f			8.1		

Curve Characteristics

Fig.1 - Typical Output Characteristics

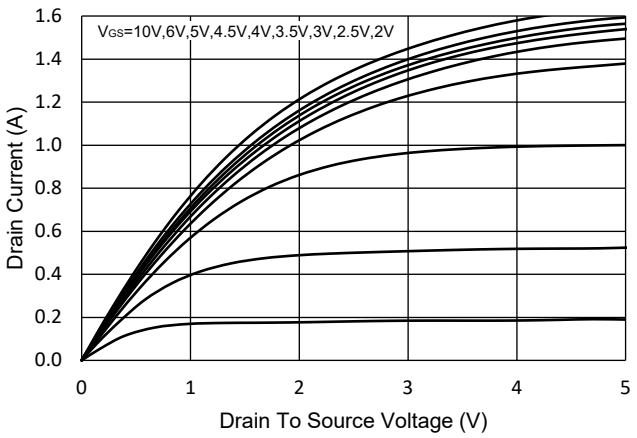


Fig.2 - Transfer Characteristic

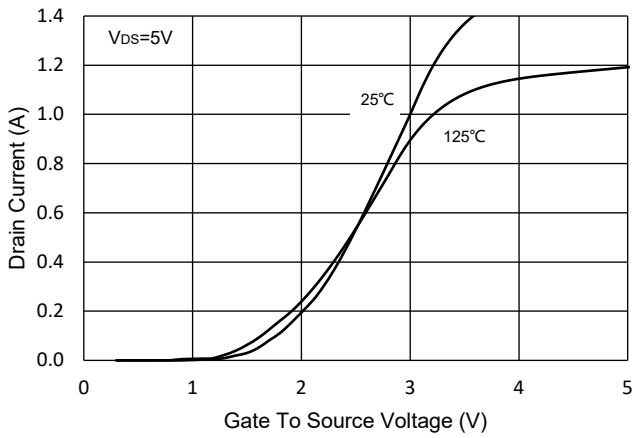


Fig.3 - $R_{DS(ON)}$ - V_{GS}

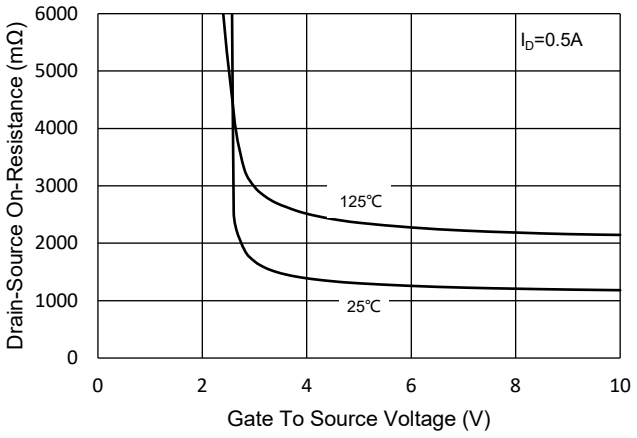


Fig. 4 - $R_{DS(ON)}$—I_D

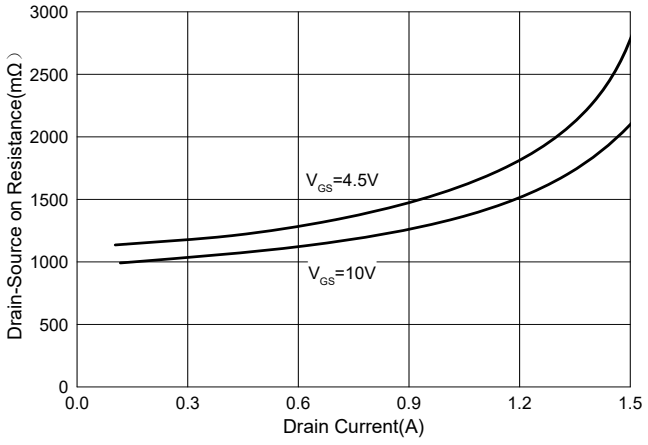


Fig.5 - Capacitance Characteristics

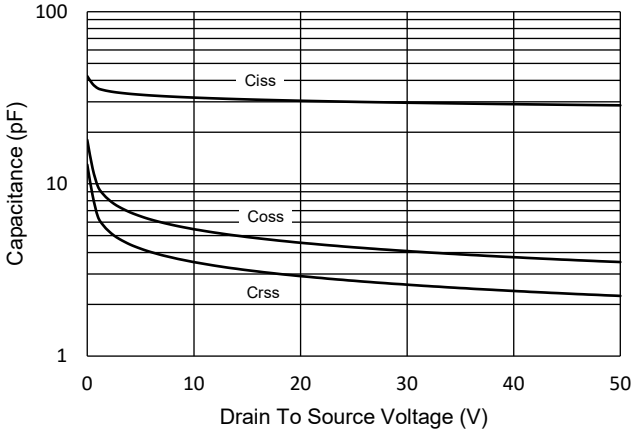
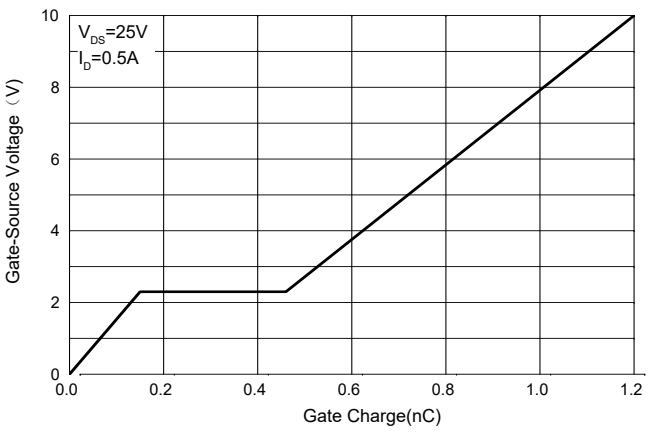


Fig. 6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

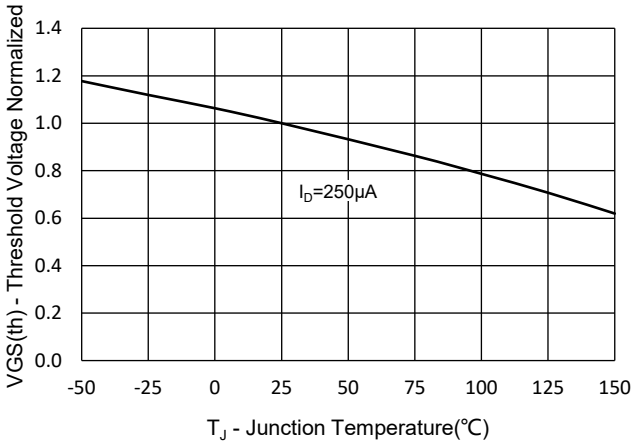


Fig.8 - Normalized On Resistance Characteristics

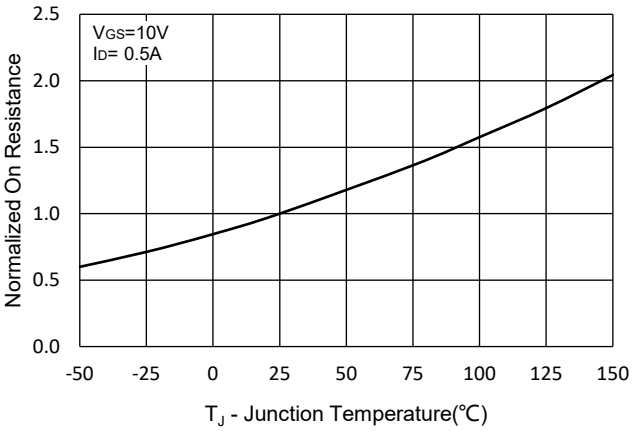


Fig.9 - I_S - V_{SD}

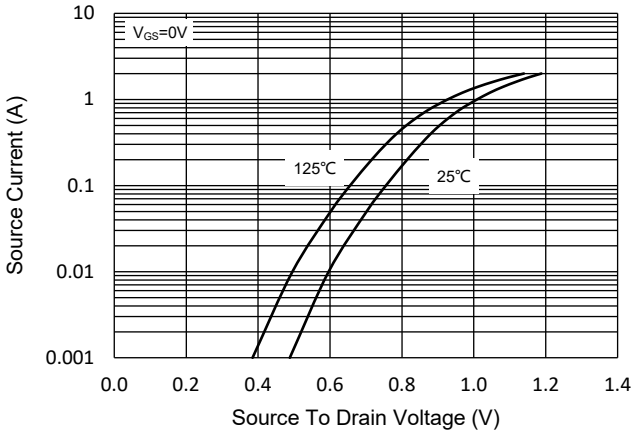


Fig. 10 - Drain Current

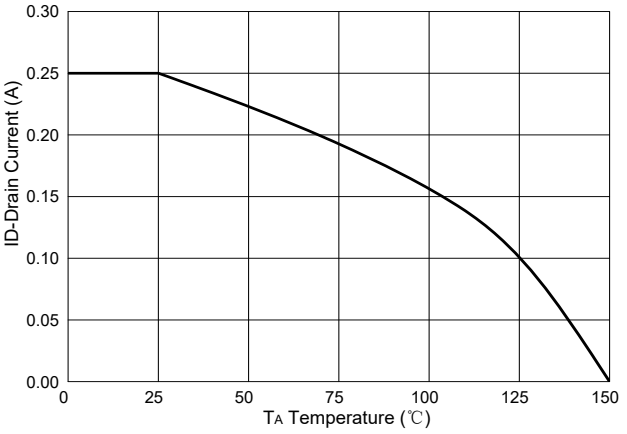
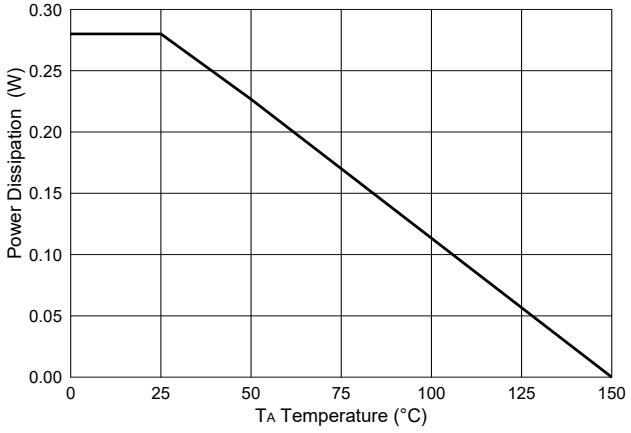


Fig.11-PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

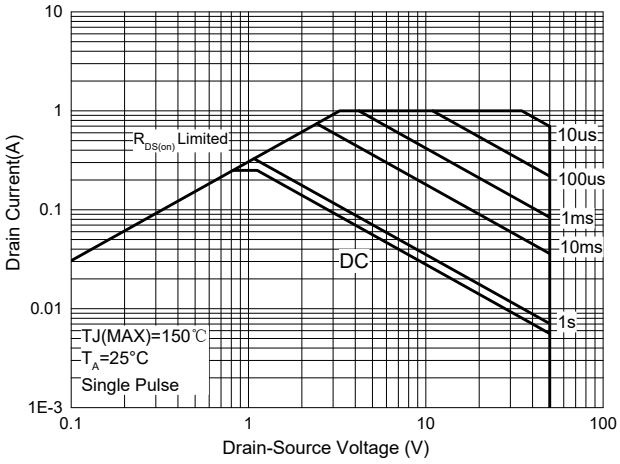
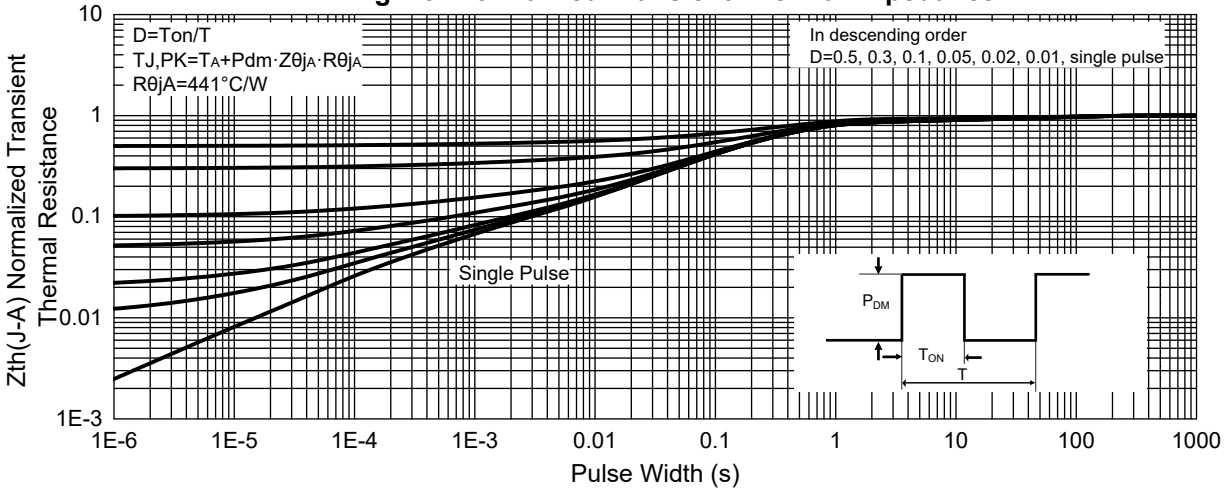


Fig. 13 -Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel
Part Number-13P	Tape&Reel: 10Kpcs/Reel