

Features

- Fast Recovery
- 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)

Maximum Ratings

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 55°C/W Junction to Ambient (Note 2)
- Thermal Resistance: 2.2°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	5
		$T_C=100^\circ\text{C}$	3.2
Pulsed Drain Current (Note 3)	I_{DM}	20	A
Total Power Dissipation (Note 4)	P_D	57	W
Single Pulsed Avalanche Energy (Note 5)	E_{AS}	20	mJ

Note:

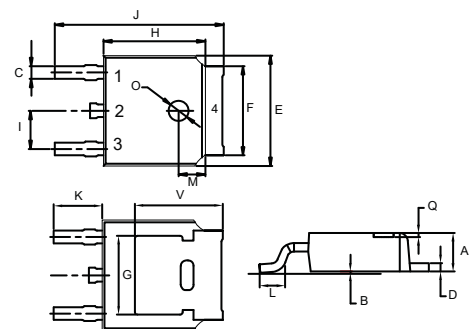
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$.
3. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
4. P_D is based on max. junction temperature, using junction-case thermal resistance.
5. $V_{DD}=500\text{V}$, $V_{GS}=10\text{V}$, $R_G=25\Omega$, $L=50\text{mH}$.

Internal Structure and Marking Code



N-CHANNEL Super-Junction Power MOSFET

DPAK(TO-252)



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.087	0.094	2.20	2.40	
B	0.000	0.005	0.00	0.13	
C	0.026	0.034	0.66	0.86	
D	0.018	0.023	0.46	0.58	
E	0.256	0.264	6.50	6.70	
F	0.201	0.215	5.10	5.46	
G	0.190		4.83		TYP.
H	0.236	0.244	6.00	6.20	
I	0.086	0.094	2.18	2.39	
J	0.386	0.409	9.80	10.40	
K	0.114		2.90		TYP.
L	0.055	0.067	1.40	1.70	
M	0.063		1.60		TYP.
O	0.043	0.051	1.10	1.30	
Q	0.000	0.012	0.00	0.30	
V	0.211		5.35		TYP.

Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	650			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 30V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=650V, V_{GS}=0V$			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	3.1	4.0	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=1A$		1.5	1.9	Ω
Gate Resistance	R_g	F=1 MHz, Open drain		9		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				5	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=2A$			1.3	V
Reverse Recovery Time	t_{rr}	$I_F=2.8A, di_F/dt=100A/\mu s$		90		ns
Reverse Recovery Charge	Q_{rr}			170		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=600V, V_{GS}=0V, f=1MHz$		165		pF
Output Capacitance	C_{oss}			5.6		
Reverse Transfer Capacitance	C_{rss}			0.9		
Total Gate Charge	Q_g	$V_{DS}=300V, V_{GS}=10V, I_D=1.5A$		5.5		nC
Gate-Source Charge	Q_{gs}			1.4		
Gate-Drain Charge	Q_{gd}			1.9		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=300V, V_{GS}=10V, I_{DS}=1.8A, R_{GEN}=2.2\Omega$		26		ns
Turn-On Rise Time	t_r			10		
Turn-Off Delay Time	$t_{d(off)}$			17		
Turn-Off Fall Time	t_f			12		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

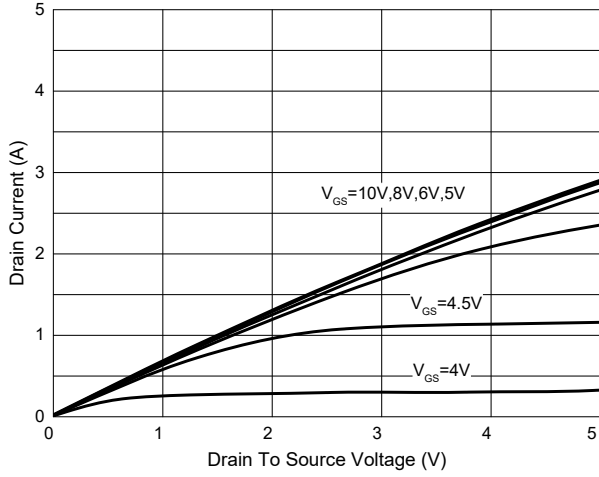


Fig. 2 - Transfer Characteristics

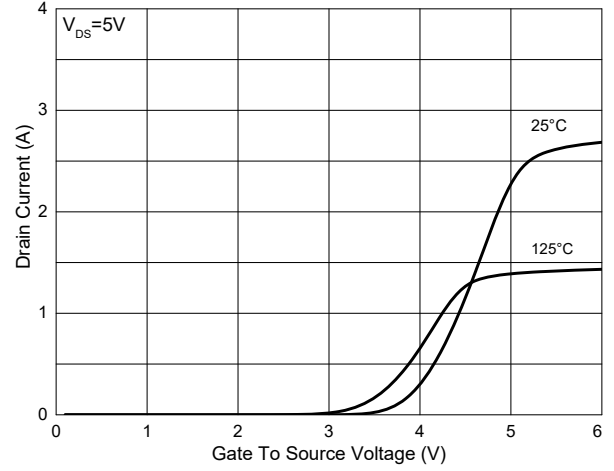


Fig. 3 - $R_{DS(ON)} - V_{GS}$

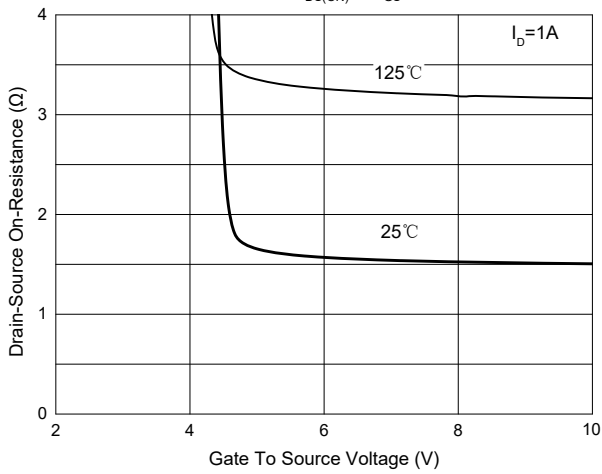


Fig. 4 - $R_{DS(ON)} - I_D$

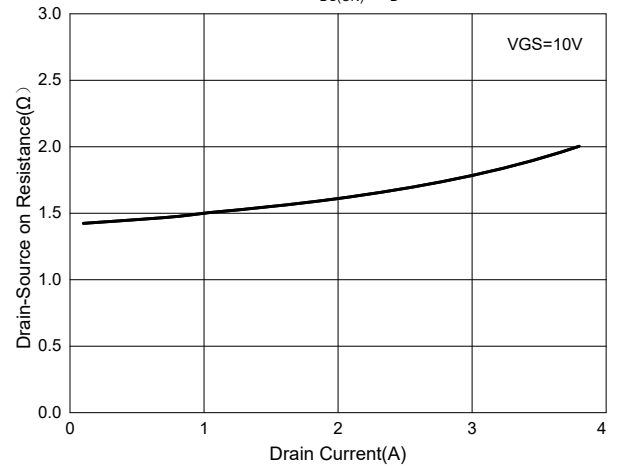


Fig. 5 - Capacitance Characteristics

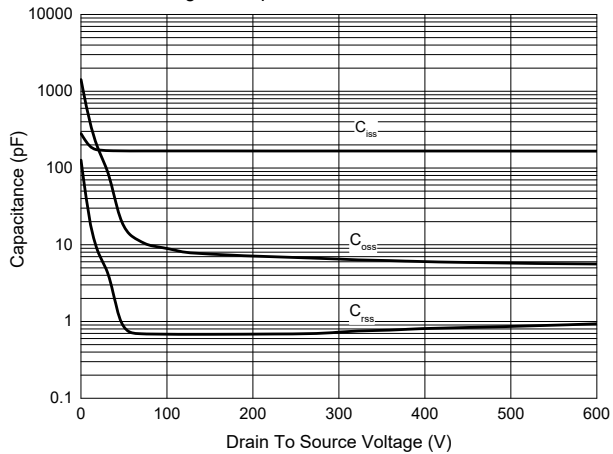
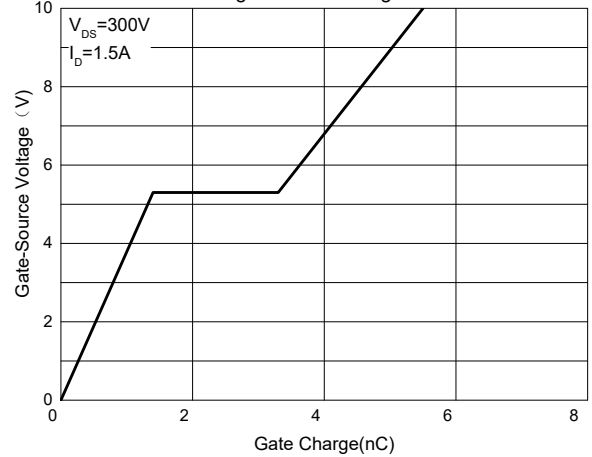


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Normalized Threshold Voltage

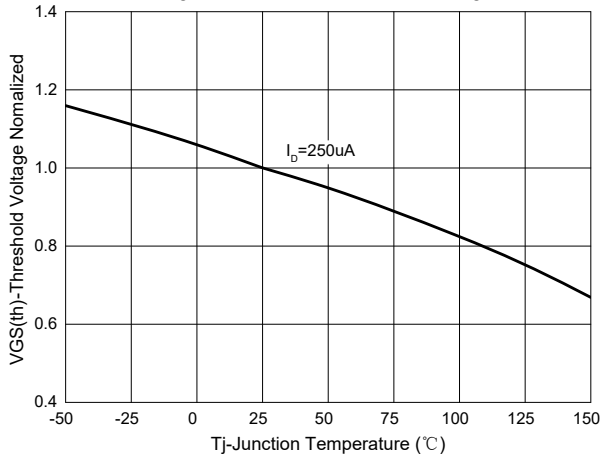


Fig.8-Normalized On Resistance Characteristics

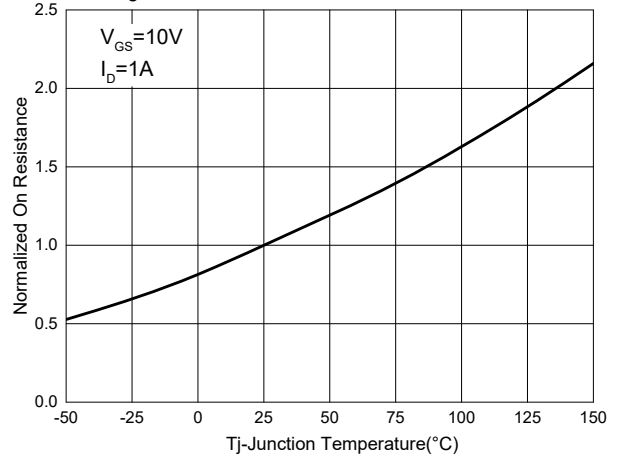


Fig.9 - $I_s - V_{SD}$

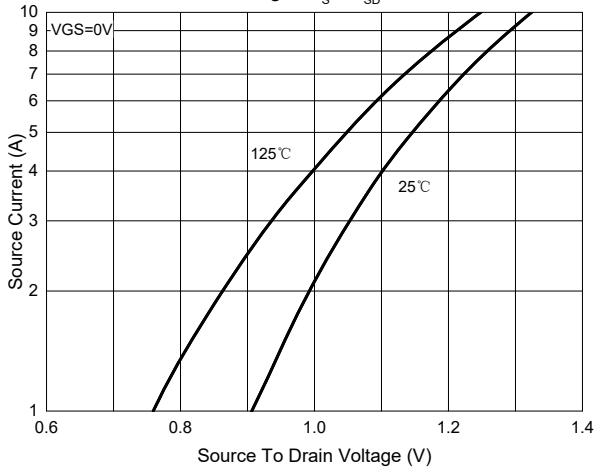


Fig. 10 - Drain Current

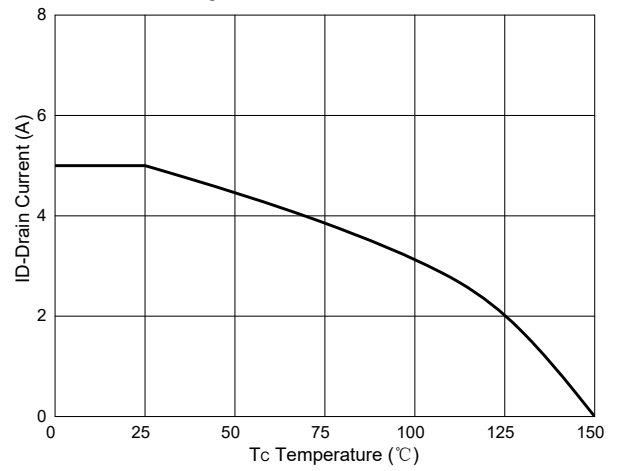
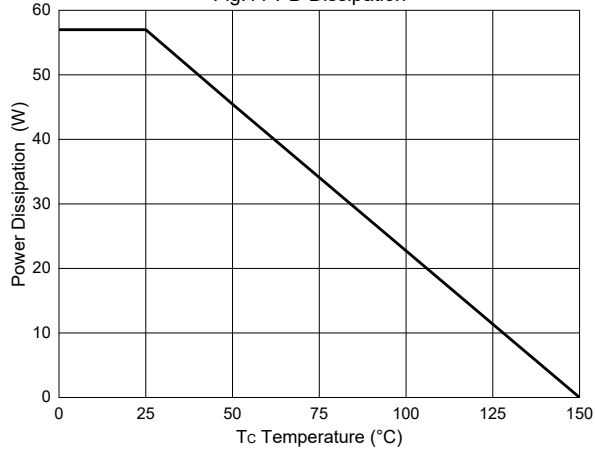


Fig.11-PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

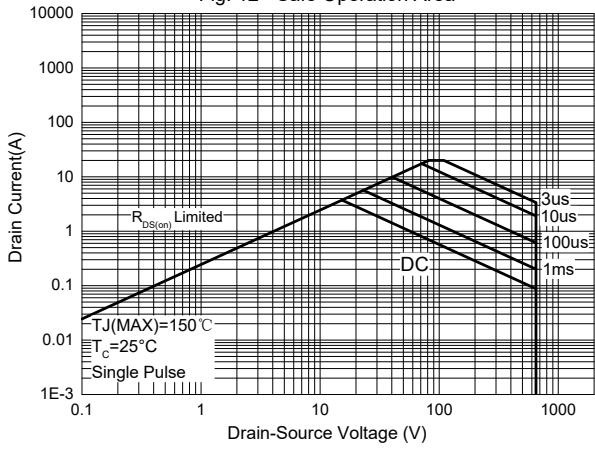
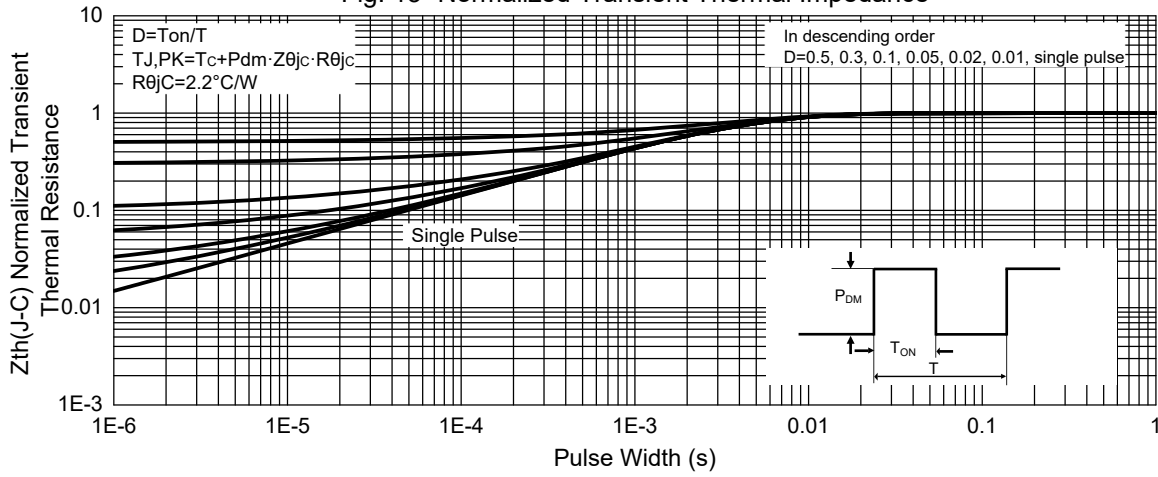


Fig. 13 -Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 2.5Kpcs/Reel

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