Features

- Trench LV MOSFET Technology
- Excellent Package For Heat Dissipation
- 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)

Dual N-CHANNEL MOSFET

Maximum Ratings

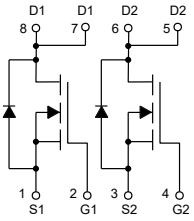
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 75°C/W Junction to Ambient(Note2)
- Thermal Resistance: 8°C/W Junction to Case

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Volltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	21	A
	T_C=100°C		13	
Pulsed Drain Current (Note3)		I_{DM}	84	A
Total Power Dissipation(Note4)		P_D	15	W
Single Pulse Avalanche Energy (Note 5)		E_{AS}	16	mJ

Note:

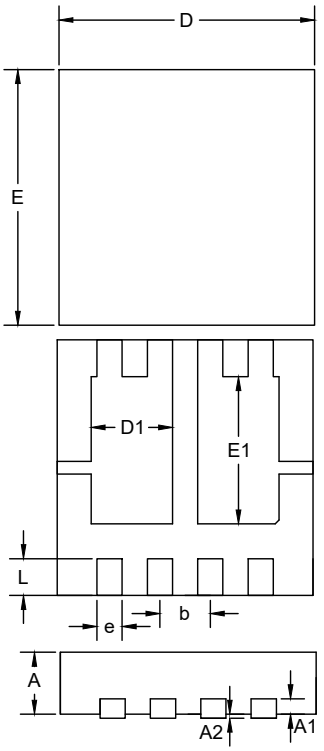
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction-case thermal resistance.
5. T_J=25°C, V_{DD}=30V, V_{GS}=10V,R_G=25Ω, L=0.5mH.

Internal Structure and Marking Code



pin1

DFN3333-D



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.030	0.033	0.750	0.850	
A1	0.008		0.200		TYP
A2	-	0.002	-	0.050	
D	0.128	0.132	3.250	3.350	
E	0.128	0.132	3.250	3.350	
D1	0.039	0.043	1.000	1.100	
E1	0.073	0.077	1.850	1.950	
b	0.026		0.650		BSC
e	0.012	0.014	0.300	0.350	
L	0.017	0.021	0.425	0.525	

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	30			V
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.0	1.5	2.2	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=12A		15	20	mΩ
		V_{GS}=4.5V, I_D=6A		30	41	
Gate Resistance	R_g	f=1 MHz, Open drain		3		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				21	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=12A			1.2	V
Reverse Recovery Time	t_{rr}	I_F=5.6A, dI_F/dt=175A/μs		9		ns
Reverse Recovery Charge	Q_{rr}			6		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=15V,V_{GS}=0V,f=1MHz		390		pF
Output Capacitance	C_{oss}			70		
Reverse Transfer Capacitance	C_{rss}			55		
Total Gate Charge	Q_g	V_{DS}=15V,V_{GS}=10V,I_D=5.6A		8.3		nC
Gate-Source Charge	Q_{gs}			1.5		
Gate-Drain Charge	Q_{gd}			2.5		
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DD}=15V,I_D=5.6A R_{GEN}=2.2Ω		5		ns
Turn-On Rise Time	t_r			31		
Turn-Off Delay Time	$t_{d(off)}$			13		
Turn-Off Fall Time	t_f			3		

Curve Characteristics

Fig.1 - Typical Output Characteristics

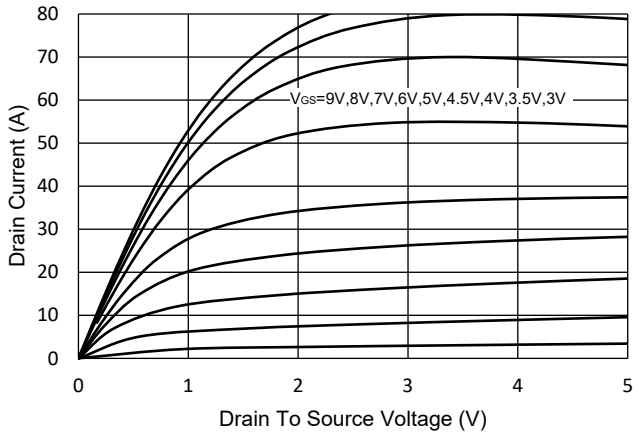


Fig.2 - Transfer Characteristic

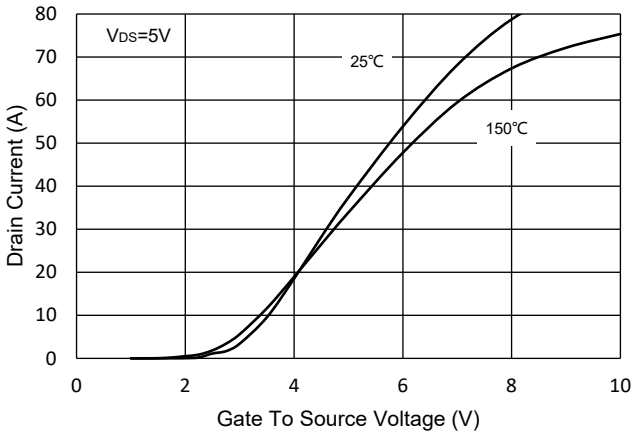


Fig.3 - $R_{DS(ON)}$ - V_{GS}

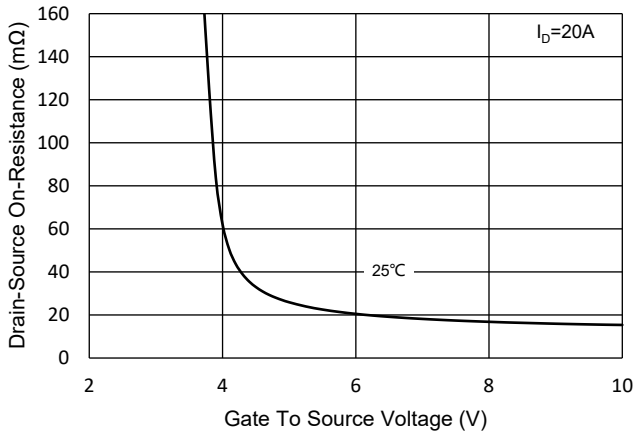


Fig.4 - $R_{DS(ON)}$ - I_D

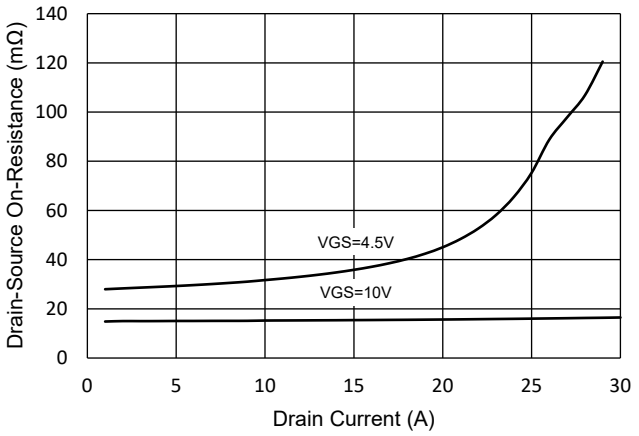


Fig.5 - Capacitance Characteristics

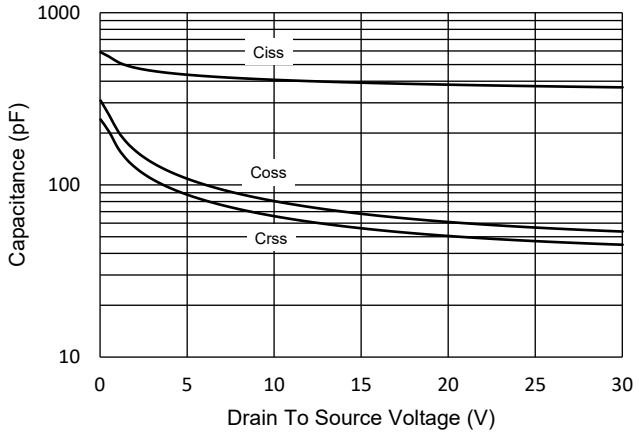
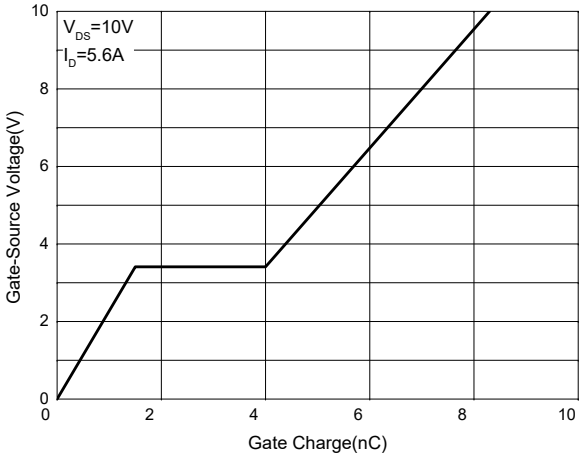


Fig. 6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

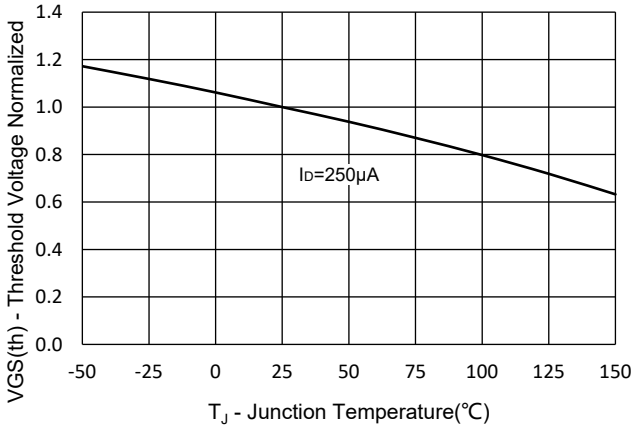


Fig.8 - Normalized On Resistance Characteristics

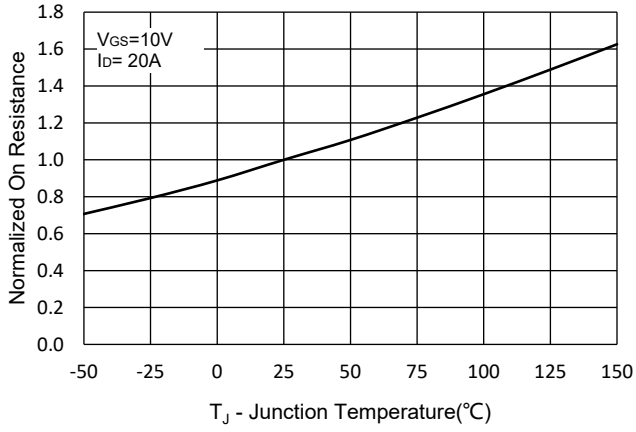


Fig.9 - I_S - V_{SD}

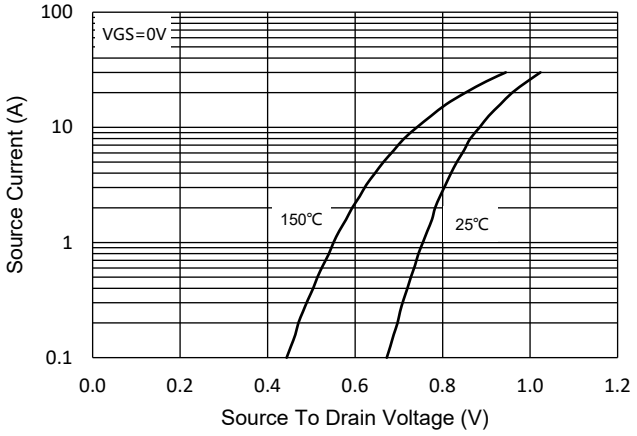


Fig.10 - Drain Current

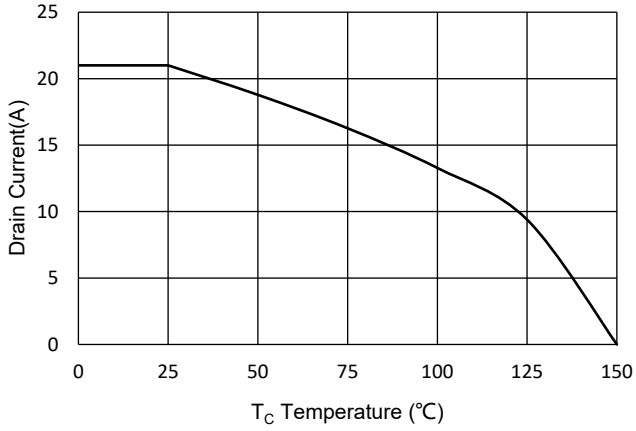
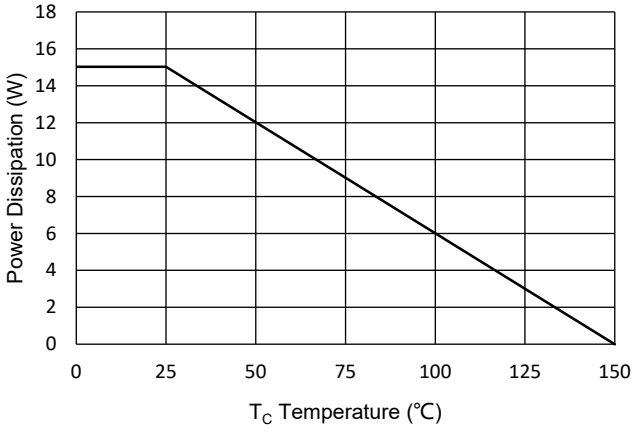


Fig.11 - PD Dissipation



Curve Characteristics

Fig.12 - Safe Operation Area

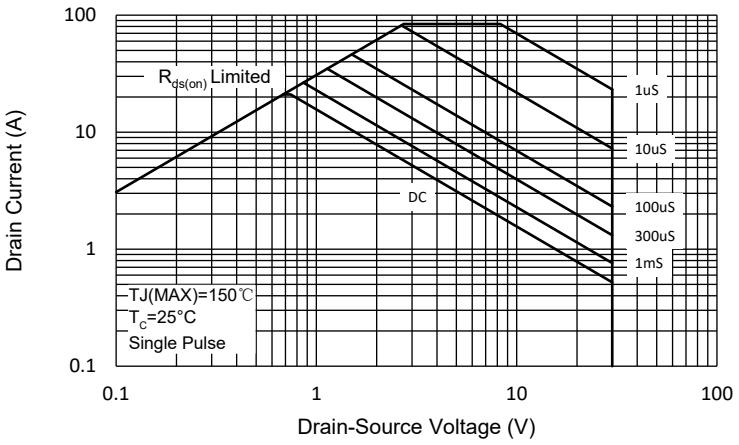
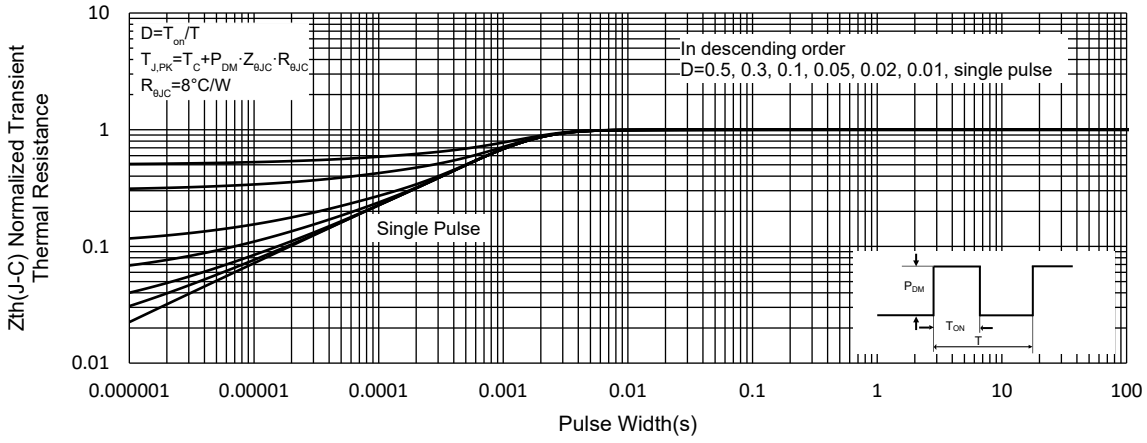


Fig.13 - Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 5Kpcs/Reel