Features

- Trench Power LV MOSFET Technology
- High Density Cell Design for Low $R_{DS(on)}$
- 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)

P-CHANNEL MOSFET

Maximum Ratings

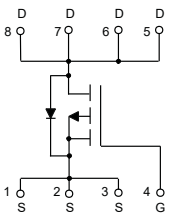
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 54°C/W Junction to Ambient(Note2)
- Thermal Resistance: 3.9°C/W Junction to Case

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Volltage		V_{GS}	±25	V
Continuous Drain Current	T_C=25°C	I_D	-30	A
	T_C=100°C		-19	
Pulsed Drain Current(Note3)		I_{DM}	-120	A
Total Power Dissipation(Note4)		P_D	32	W
Single Pulsed Avalanche Energy(Note5)		E_{AS}	100	mJ

Note:

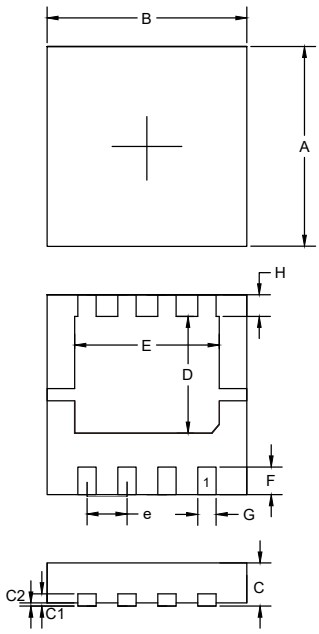
1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A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

Internal Structure and Marking Code





DFN3333



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.126	0.130	3.20	3.30	
B	0.126	0.130	3.20	3.30	
C	0.030	0.033	0.75	0.85	
C1	0.007	0.009	0.18	0.22	
C2	---	0.002	---	0.05	
D	0.071	0.079	1.80	2.00	
E	0.087	0.098	2.20	2.50	
F	0.016	0.020	0.40	0.50	
G	0.010	0.014	0.25	0.35	
H	0.012	0.016	0.30	0.40	
e	0.024	0.028	0.60	0.70	

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} =±25V			±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	-1.2	-1.8	-2.8	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-20V, I_D=-20A		8.6	13	mΩ
		V_{GS}=-10V, I_D=-15A		9.8	15	
		V_{GS}=-6V, I_D=-12A		12.1	22	
		V_{GS}=-4.5V, I_D=-12A		15.5	25	
Gate Resistance	R_g	f=1MHz, Open Drain		5.9		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				-30	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=-20A			-1.2	V
Reverse Recovery Time	t_{rr}	I_F=20A, dI_F/dt=100A/μs		24.8		ns
Reverse Recovery Charge	Q_{rr}			12.5		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-15V,V_{GS}=0V,f=1MHz		2450		pF
Output Capacitance	C_{oss}			315		
Reverse Transfer Capacitance	C_{rss}			274		
Total Gate Charge	Q_g	V_{DS}=-15V,V_{GS}=-10V,I_D=-20A		43.8		nC
Gate-Source Charge	Q_{gs}			6.7		
Gate-Drain Charge	Q_{gd}			9.6		
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=-10V,V_{DD}=-15V, I_D=-1A, R_{GEN}=2.5Ω		10		ns
Turn-On Rise Time	t_r			6.9		
Turn-Off Delay Time	$t_{d(off)}$			77		
Turn-Off Fall Time	t_f			35		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

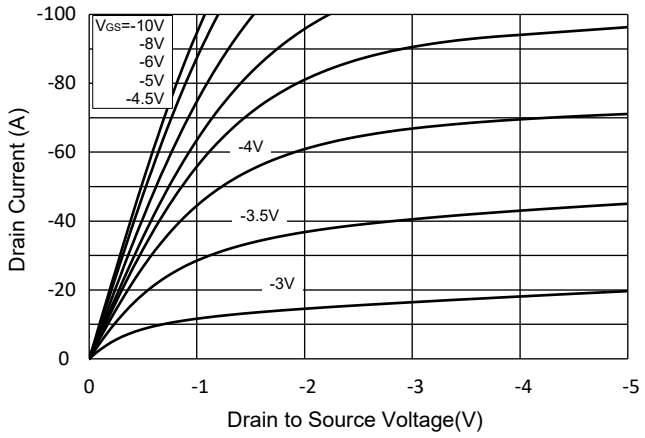


Fig.2 Transfer Characteristic

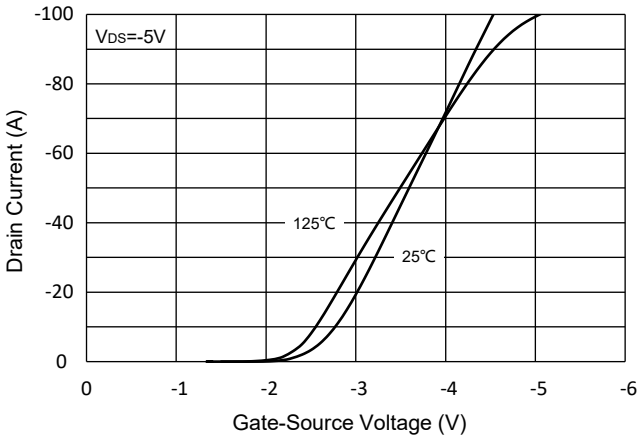


Fig.3 Rdson-Vgs

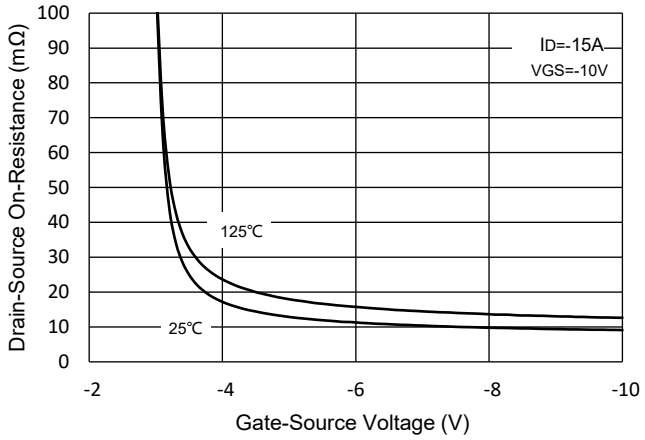


Fig.4 $R_{DS(ON)}$-I_D

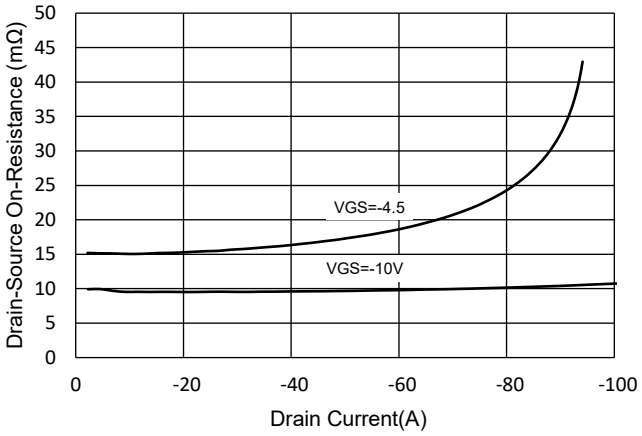


Fig.5 Capacitance Characteristics

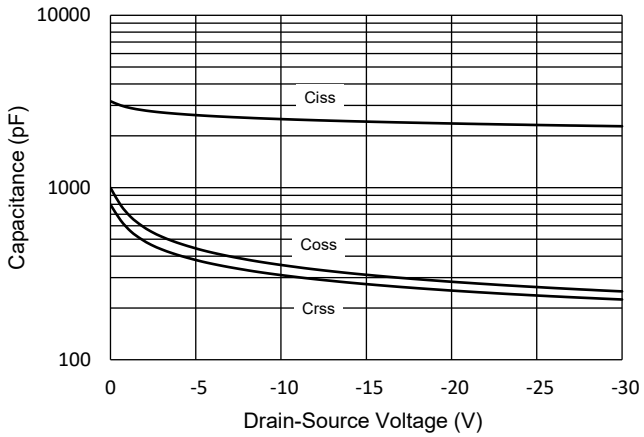
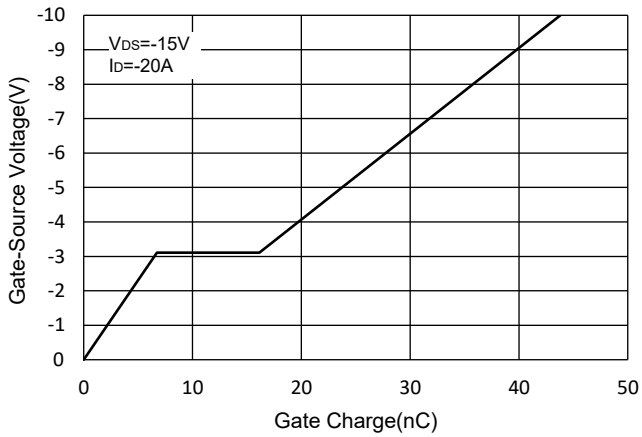


Fig.6 Gate Charge



Curve Characteristics

Fig.7 Normalized Threshold Voltage

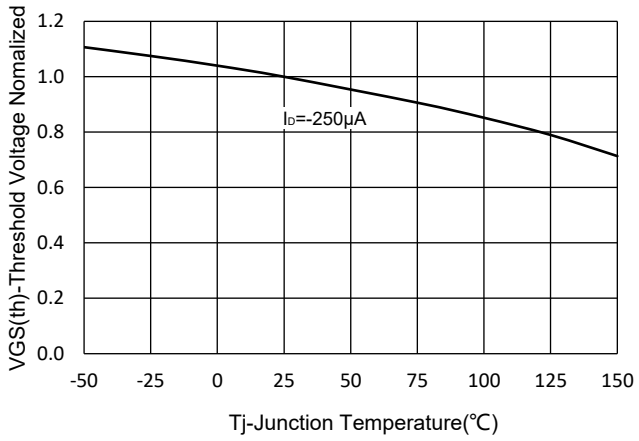


Fig.8 Normalized On Resistance Characteristics

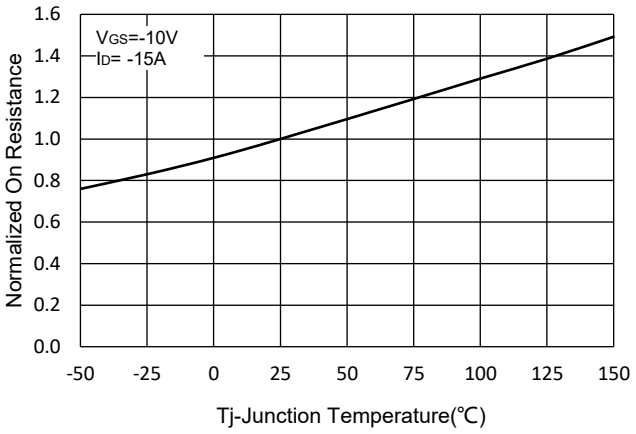


Fig.9 IS-VSD

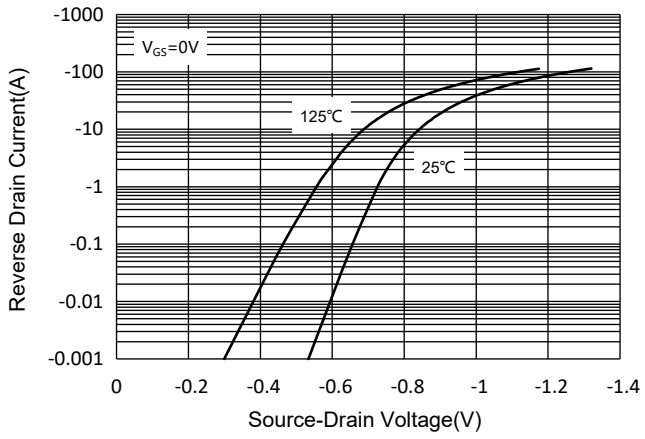


Fig.10 Drain Current

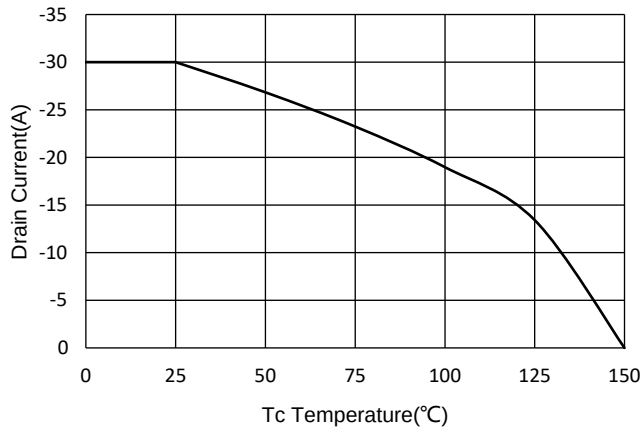
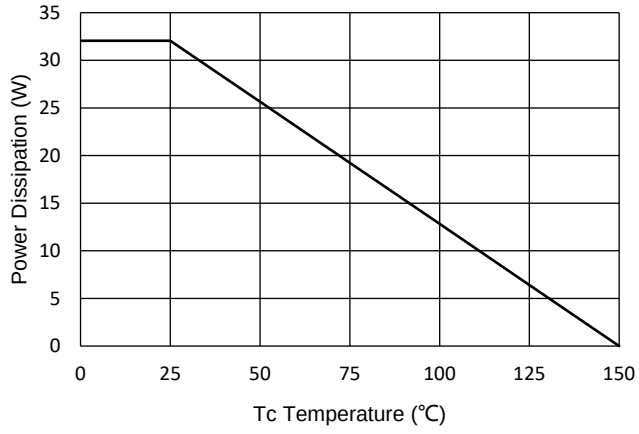


Fig.11 Power Dissipation



Curve Characteristics

Fig.12 Safe Operation Area

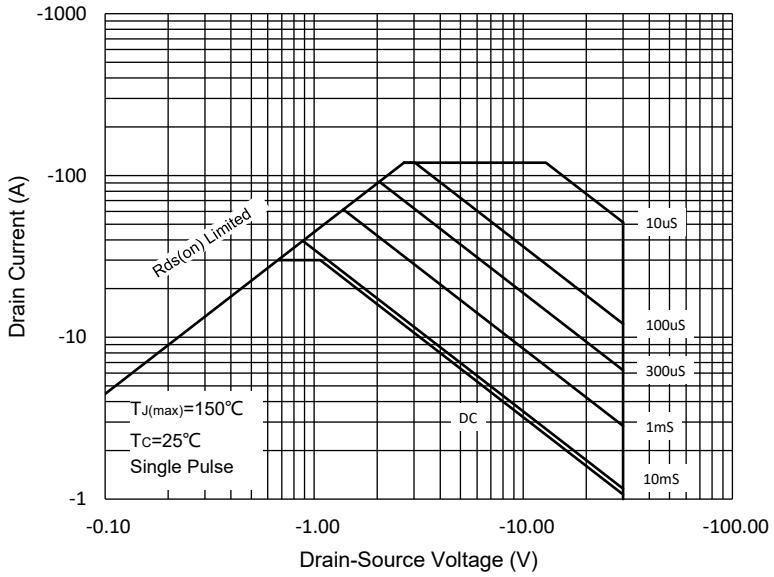
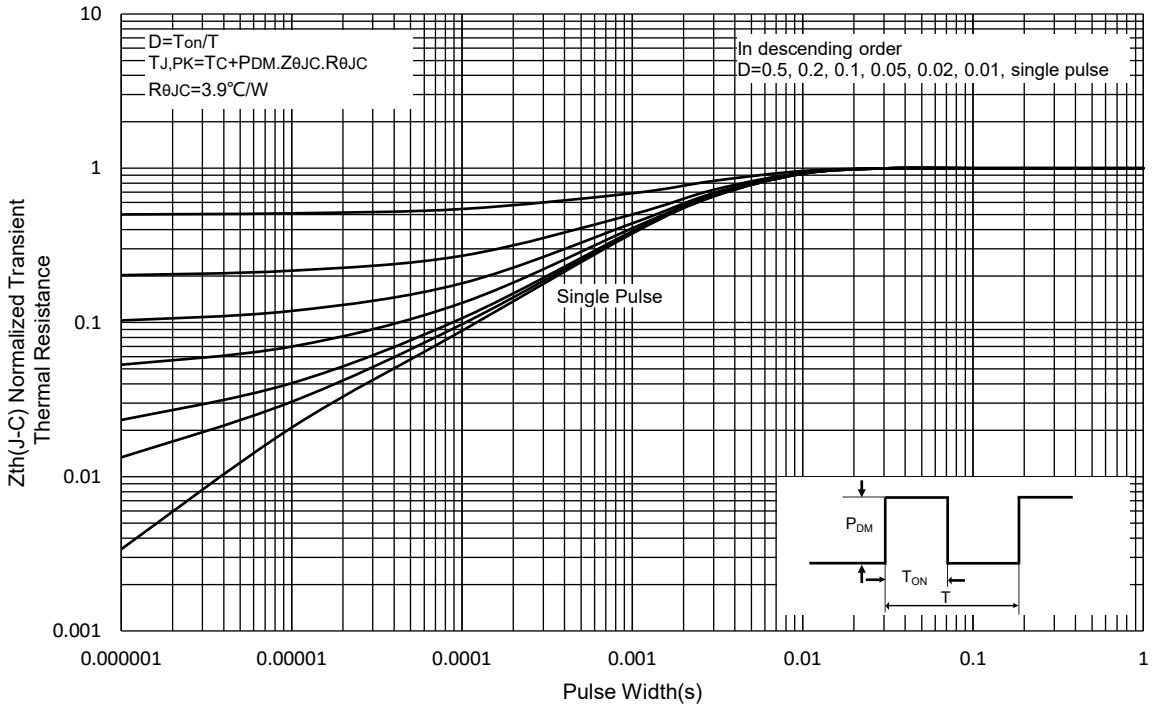


Fig.13 Normalized Transient Thermal Impedance



Ordering Information

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

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