Features

- High Density Cell Design for Low $R_{DS(on)}$
- Trench Power LV MOSFET Technology
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. “Green” Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

N-CHANNEL MOSFET

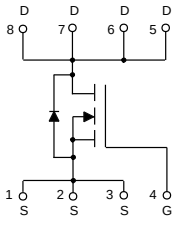
Maximum Ratings

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 53.4°C/W Junction to Ambient
- Thermal Resistance: 5.9°C/W Junction to Case

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Volltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	20	A
	T_C=100°C		14	
Pulsed Drain Current		I_{DM}	90	A
Total Power Dissipation	T_C=25°C	P_D	21	W
	T_A=25°C		2.34	
Single Pulsed Avalanche Energy(Note 2)		E_{AS}	70	mJ

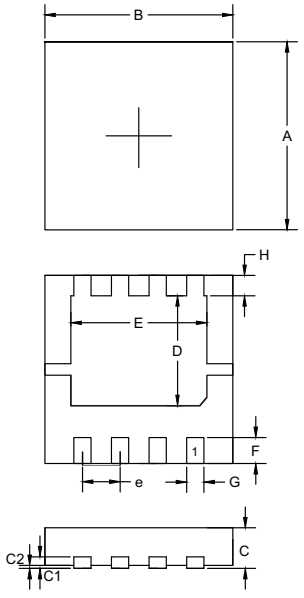
Note:
1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. T_J=25°C, V_{DD}=20V, V_G=10V, L=0.5mH, R_g=25Ω.

Internal Structure and Marking Code



pin1

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	40			V
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V, V_{GS}=0V			1	μA
Gate-Threshold Voltage(Note 2)	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1	1.5	2.5	V
Drain-Source On-Resistance(Note 2)	$R_{DS(on)}$	V_{GS}=10V, I_D=20A		11	14	mΩ
		V_{GS}=4.5V, I_D=10A		14.3	18.5	
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=10A		0.7	1.2	V
Maximum Body-Diode Continuous Current	I_S				35	A
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=20V,V_{GS}=0V,f=1MHz		750		pF
Output Capacitance	C_{oss}			150		
Reverse Transfer Capacitance	C_{rss}			80		
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS}=20V,V_{GS}=10V,I_D=20A		15		nC
Gate-Source Charge	Q_{gs}			3		
Gate-Drain Charge	Q_{gd}			2.5		
Reverse Recovery Chrage	Q_{rr}	I_S=20A, di/dt=100A/μs		26		
Reverse Recovery Time	t_{rr}			29		ns
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V,V_{DD}=20V, I_D=2A,R_L=1Ω R_{GEN}=3Ω		6		
Turn-On Rise Time	t_r			17.5		
Turn-Off Delay Time	$t_{d(off)}$			31		
Turn-Off Fall Time	t_f			17		

Note 2. Pulse Test: Pulse Width≤300μs,Duty Cycle ≤2%.

Curve Characteristics

Fig. 1 - Typical Output Characteristics

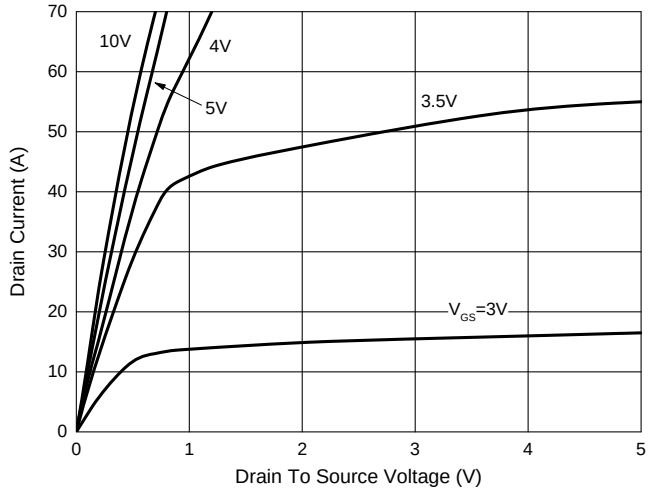


Fig. 2 - Transfer Characteristics

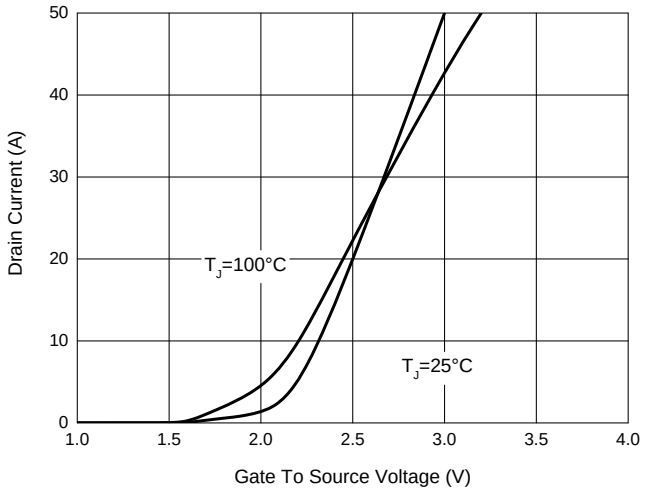


Fig. 3 - Capacitance Characteristics

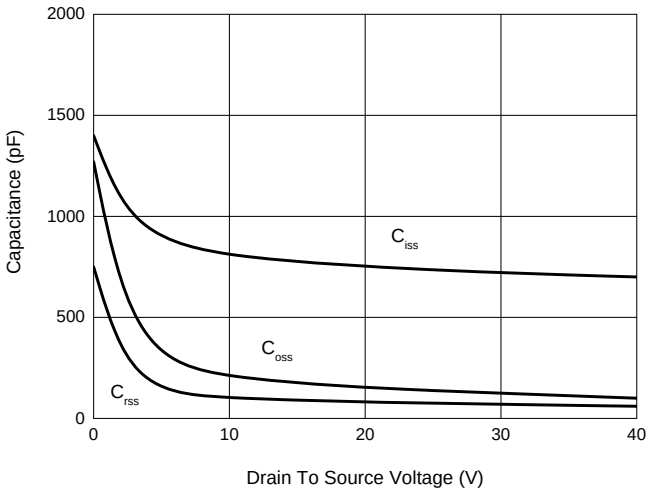


Fig. 4 - Gate Charge Characteristics

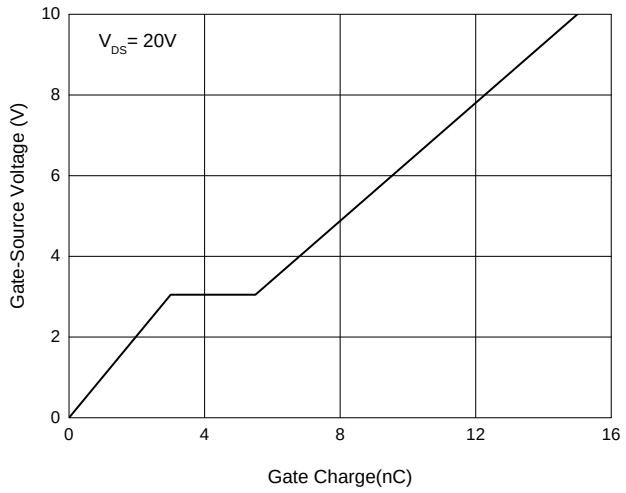


Fig. 5 - $R_{DS(ON)}$—I_D

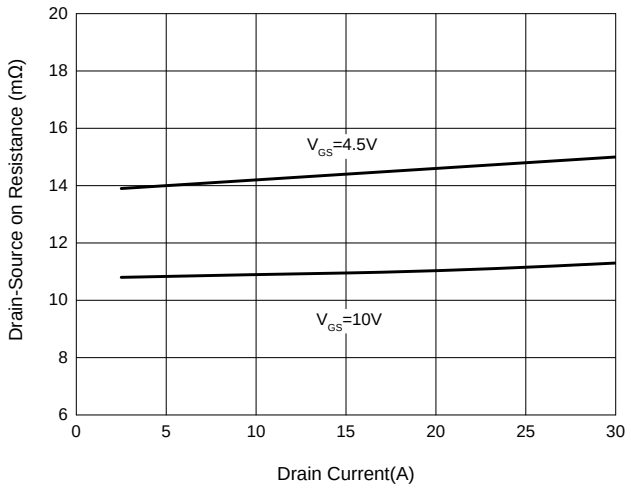
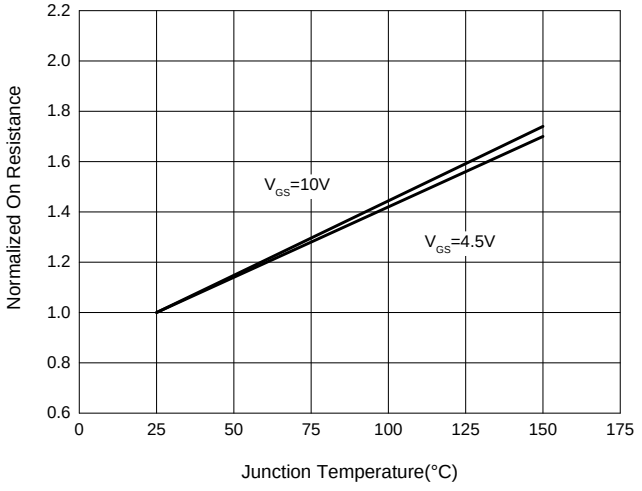


Fig. 6 - Normalized On Resistance Characteristics



Ordering Information

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