

Features

- Split Gate Trench MOSFET Technology
- Excellent Package For Heat Dissipation
- High Density Cell Design For Low $R_{DS(ON)}$
- Moisture Sensitivity Level 3
- 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)

Maximum Ratings

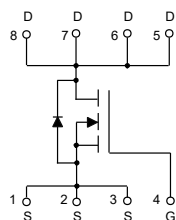
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 65°C/W Junction to Ambient^(Note2)
- Thermal Resistance: 1.8°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	135	A
		95	
	$T_C=25^\circ\text{C}$		
	$T_C=100^\circ\text{C}$		
Pulsed Drain Current ^(Note3)	I_{DM}	540	A
Total Power Dissipation ^(Note4)	P_D	83	W
Single Pulse Avalanche Energy ^(Note5)	E_{AS}	121	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 max. junction temperature.
4. P_D is based on max. junction temperature, using junction-case thermal resistance.
5. $T_J=25^\circ\text{C}$, $V_{DD}=30\text{V}$, $V_{GS}=10\text{V}$, $R_G=25\Omega$, $L=0.5\text{mH}$.

Internal Structure and Marking Code

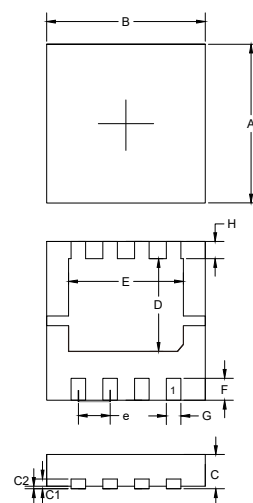


pin1

4 codes in total
YY is the year
WW is the week

N-CHANNEL MOSFET

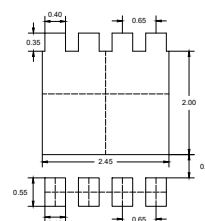
DFN3333



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	

Suggested Solder Pad Layout

Unit:mm



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 =1mA	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} =32V, V _{GS} =0V			1	μA
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.1	1.6	2.9	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		2.1	2.5	mΩ
		V _{GS} =4.5V, I _D =20A		3.1	3.9	
Gate Resistance	R _g	f=1 MHz, Open drain		1.7		Ω
Diode Characteristics						
Continuous Body Diode Current	I _S				135	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		34		ns
Reverse Recovery Charge	Q _{rr}			28		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f=1MHz		2342		pF
Output Capacitance	C _{oss}			1107		
Reverse Transfer Capacitance	C _{rss}			66		
Total Gate Charge	Q _g	V _{DS} =20V, V _{GS} =10V, I _D =20A		45.2		nC
Gate-Source Charge	Q _{gs}			8.9		
Gate-Drain Charge	Q _{gd}			10.9		
Turn-On Delay Time	t _{d(on)}	V _{DD} =20V, V _{GS} =10V R _G =2.2Ω, I _D =20A		12.2		ns
Turn-On Rise Time	t _r			45.8		
Turn-Off Delay Time	t _{d(off)}			36.5		
Turn-Off Fall Time	t _f			18		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

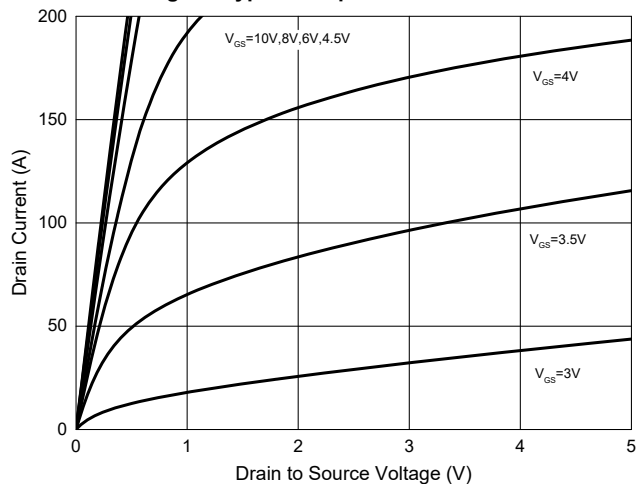


Fig. 2 - Transfer Characteristics

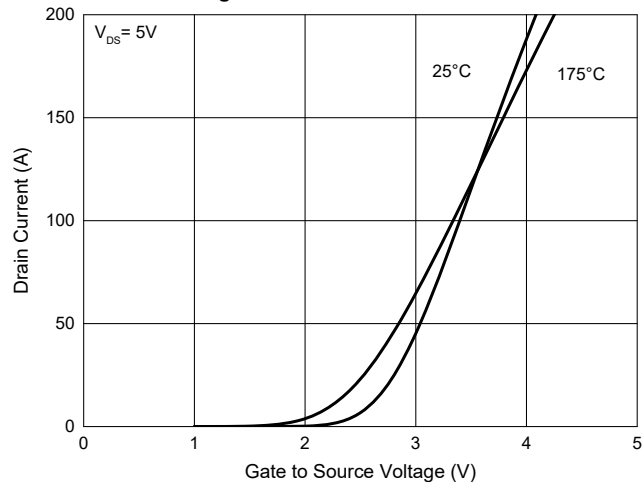


Fig. 3 - $R_{DS(ON)}$ - V_{GS}

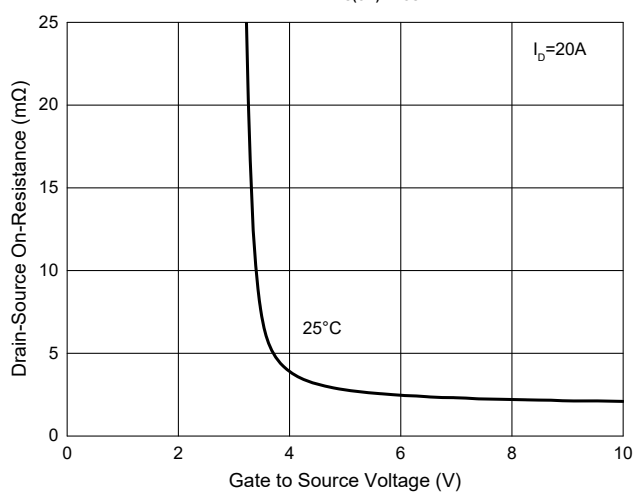


Fig. 4 - $R_{DS(ON)}$ - I_D

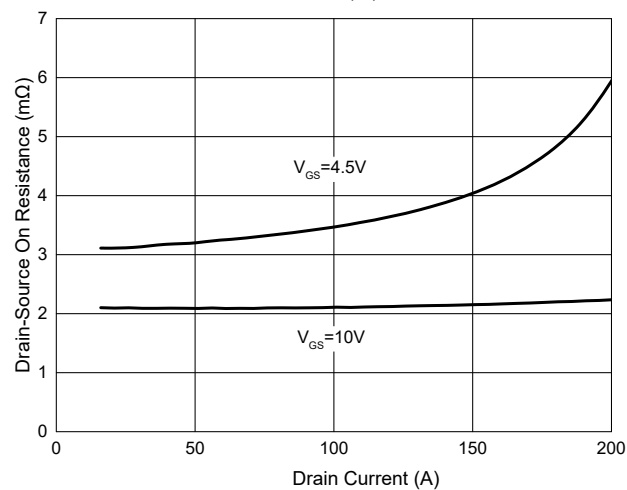


Fig. 5 - Capacitance Characteristics

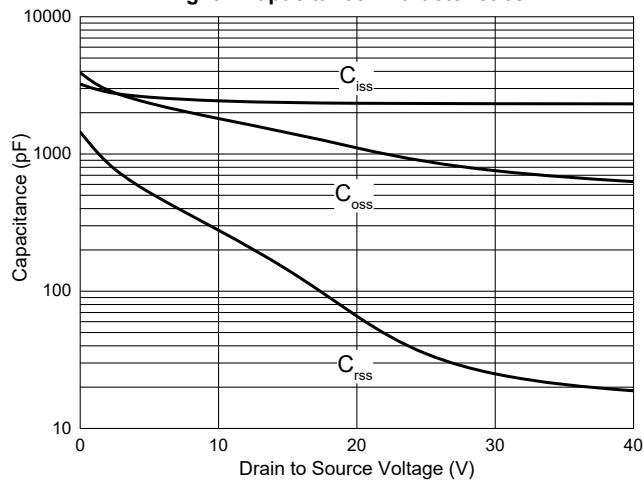
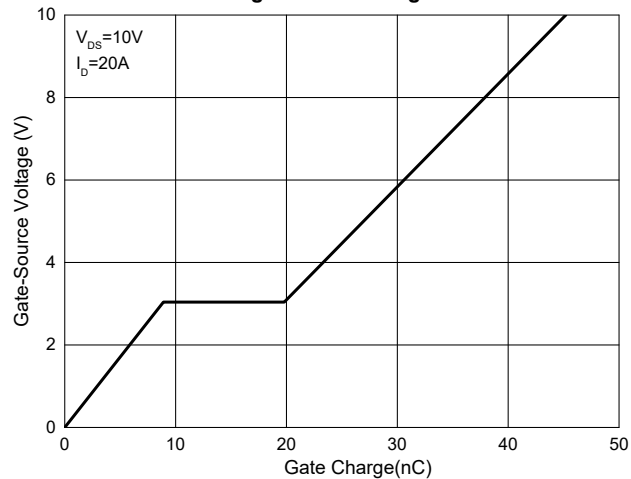


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Normalized Threshold Voltage

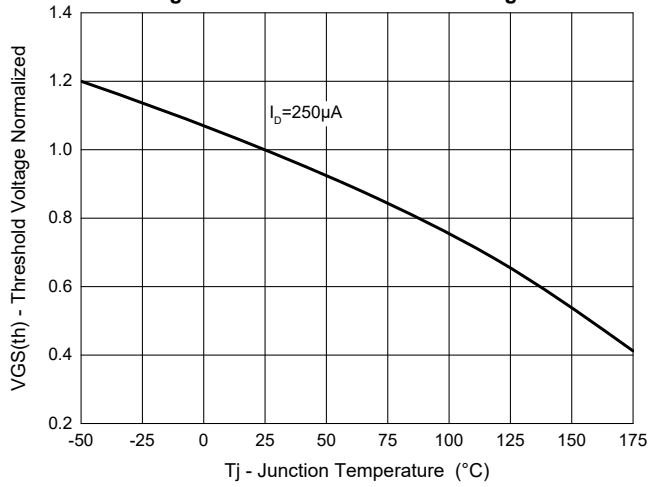


Fig. 8 - Normalized On Resistance Characteristics

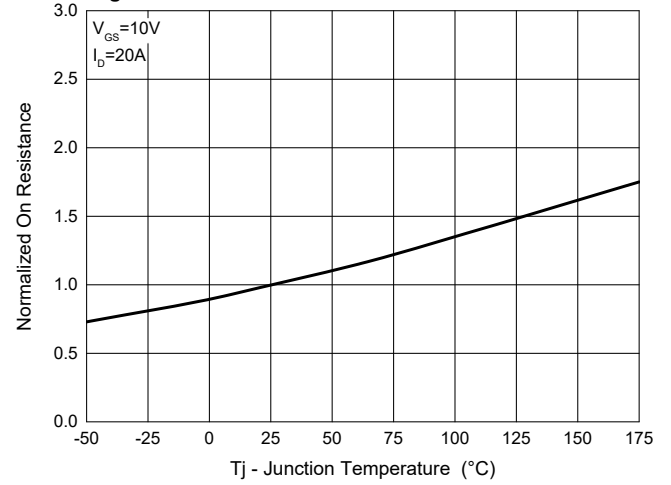


Fig. 9 - I_S - V_{SD}

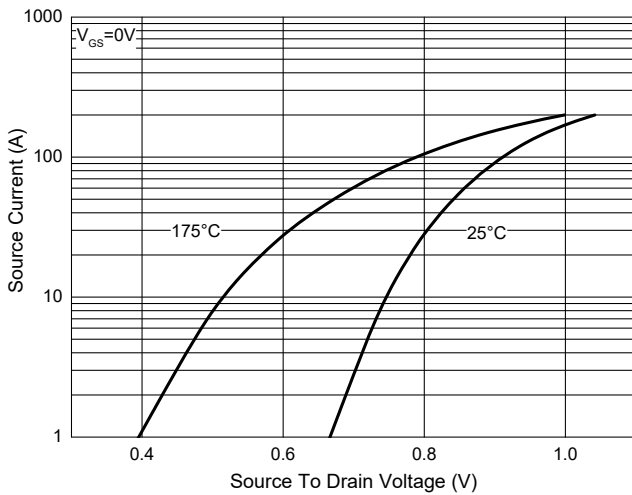


Fig. 10 - Drain Current

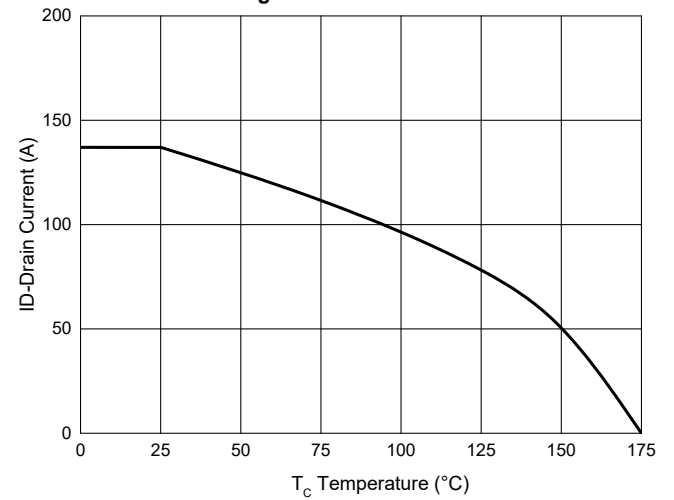
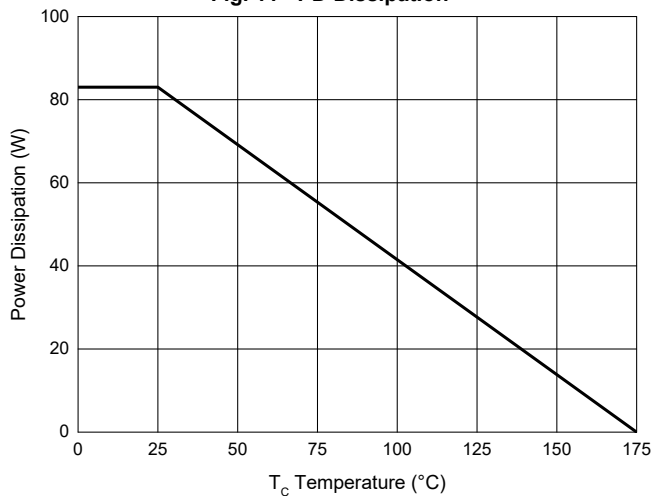


Fig. 11 - PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

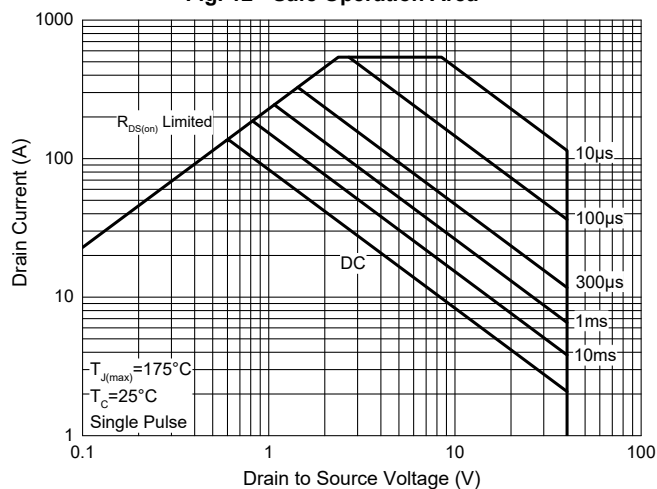
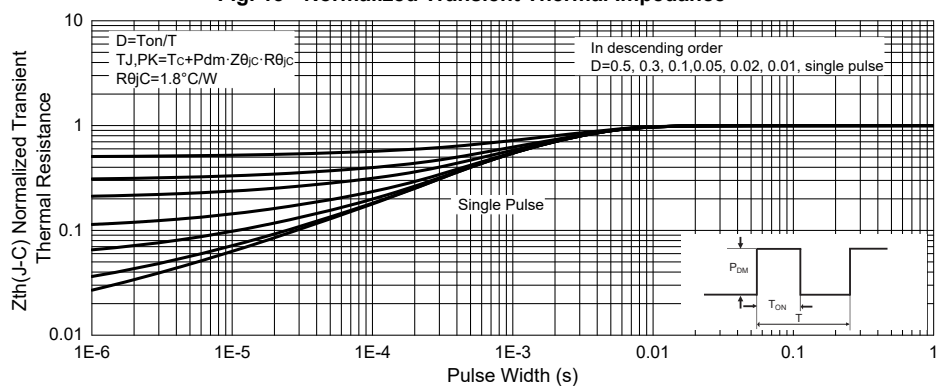


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

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

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