

Features

- Trench LV MOSFET Technology
- ESD HBM Class 1C
- 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

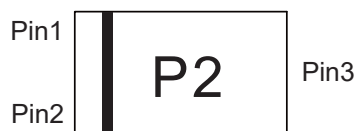
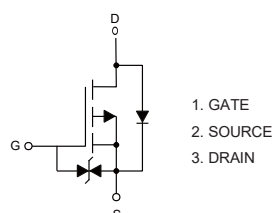
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Maximum Thermal Resistance: 177°C/W Junction to Ambient (Note 2)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 12	V
Drain Current-Continuous	$T_A = 25^\circ\text{C}$	I_D	-0.88	A
	$T_A = 100^\circ\text{C}$		-0.55	
Pulsed Drain Current (Note 3)		I_{DM}	-3.52	A
Power Dissipation (Note 4)		P_D	0.70	W

Note:

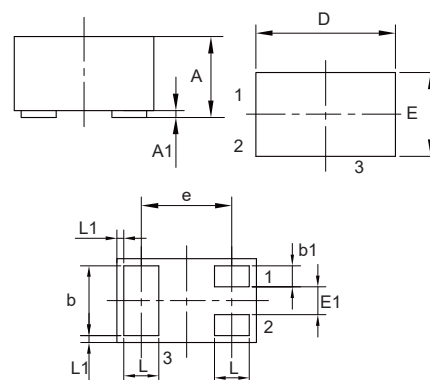
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction to ambient thermal resistance.

Internal Structure and Marking Code



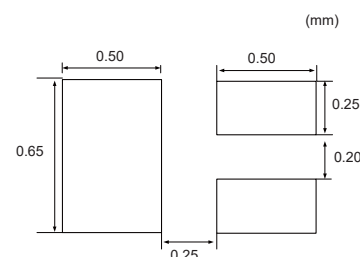
P-Channel MOSFET

DFN1006-3



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.015	0.020	0.40	0.50	
A1	0.000	0.002	0.00	0.05	
b	0.018	0.022	0.45	0.55	
b1	0.004	0.008	0.10	0.20	
D	0.037	0.042	0.95	1.075	
E	0.022	0.026	0.55	0.675	
E1	0.006	0.010	0.15	0.25	
e	0.026		0.65		TYP.
L	0.008	0.012	0.20	0.30	
L1	0.0002		0.05		TYP.

Suggested Solder Pad Layout



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 =-250uA	-20			V
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±10	μA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V			-1	μA
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.4	-0.8	-1.0	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-4.5V, I _D =-0.3A		400	600	mΩ
		V _{GS} =-2.5V, I _D =-0.2A		560	860	
		V _{GS} =-1.8V, I _D =-0.1A		810	1200	
Gate Resistance	R _g	f=1 MHz, Open Drain		2711		Ω
Diode Characteristics						
Continuous Body Diode Current	I _S				-0.88	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =-0.3A			-1.2	V
Reverse Recovery Time	t _{rr}	IF=-0.3A, dIF/dt=100A/μs		241		ns
Reverse Recovery Charge	Q _{rr}			83		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =-10V,V _{GS} =0V,f=1MHz		23.3		pF
Output Capacitance	C _{oss}			10.1		
Reverse Transfer Capacitance	C _{rss}			2.8		
Total Gate Charge	Q _g	V _{DS} =-15V,V _{GS} =-4.5V,I _D =-1A		1.08		nC
Gate-Source Charge	Q _{gs}			0.39		
Gate-Drain Charge	Q _{gd}			0.08		
Turn-On Delay Time	t _{d(on)}	V _{DD} =-10V,V _{GS} =-4.5V, I _D =-1A,R _G =3Ω		0.4		ns
Turn-On Rise Time	t _r			0.03		
Turn-Off Delay Time	t _{d(off)}			0.04		
Turn-Off Fall Time	t _f			1.1		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

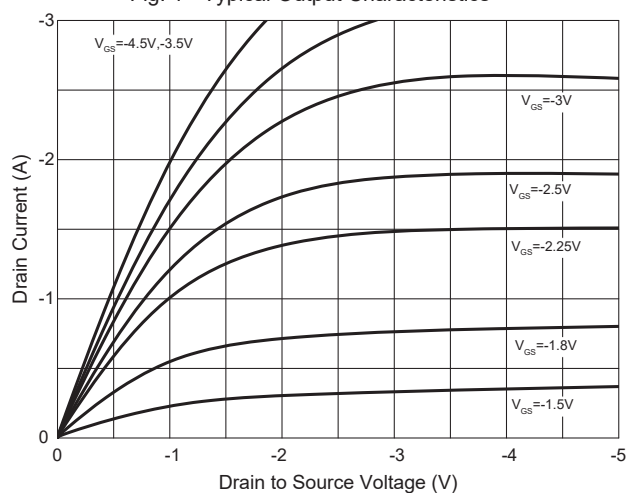


Fig. 2 - Transfer Characteristics

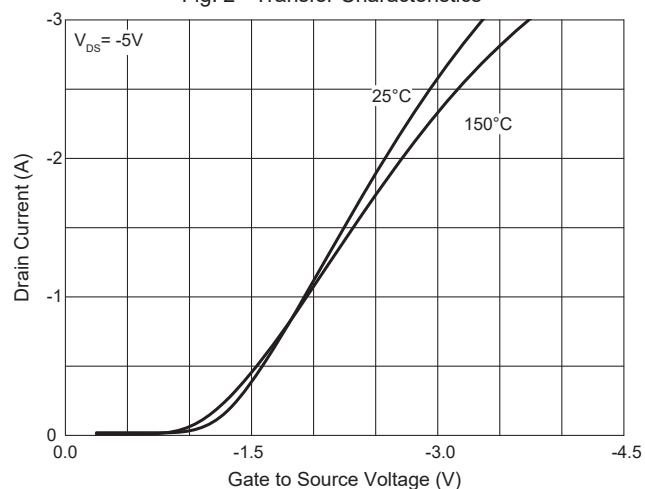


Fig. 3 - $R_{DS(ON)} - V_{GS}$

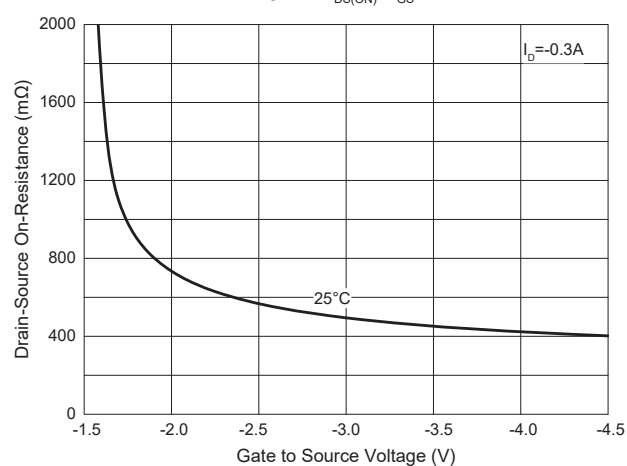


Fig. 4 - $R_{DS(ON)} - I_D$

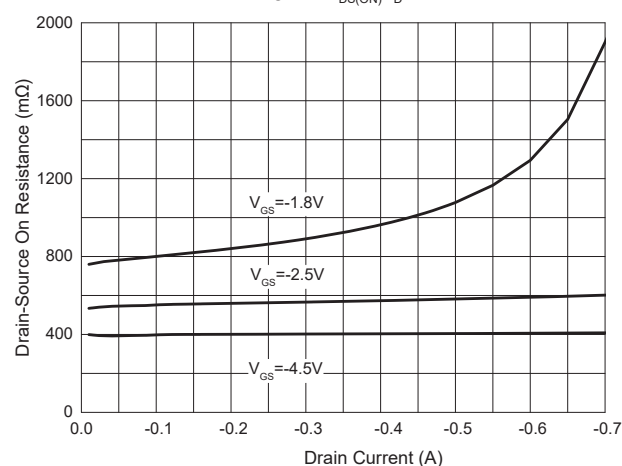


Fig. 5 - Capacitance Characteristics

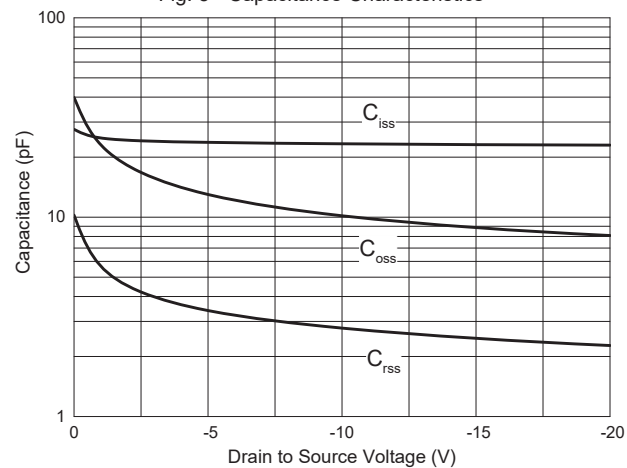
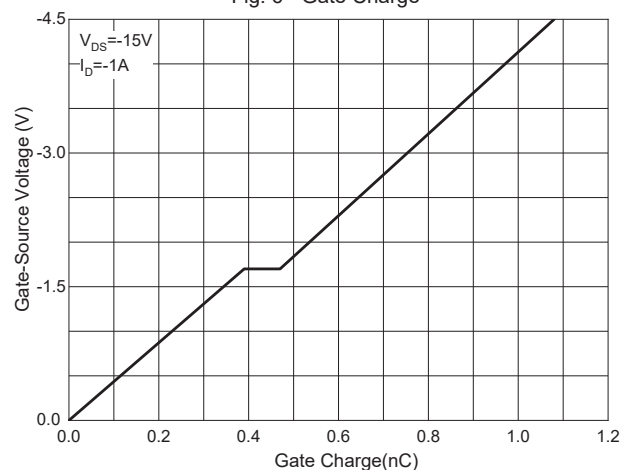


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Normalized Threshold Voltage

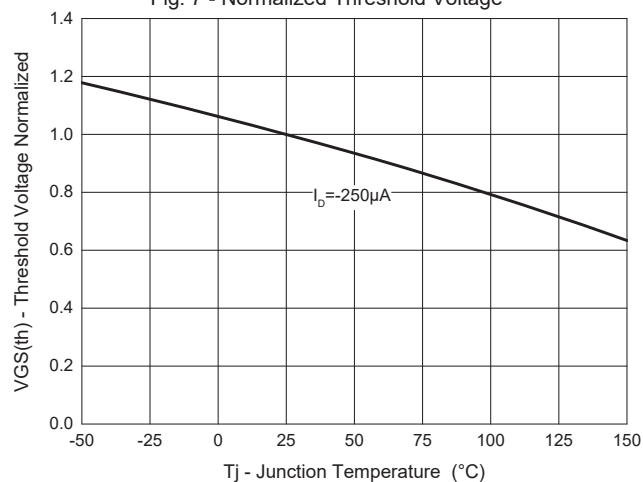


Fig. 8 - Normalized On Resistance Characteristics

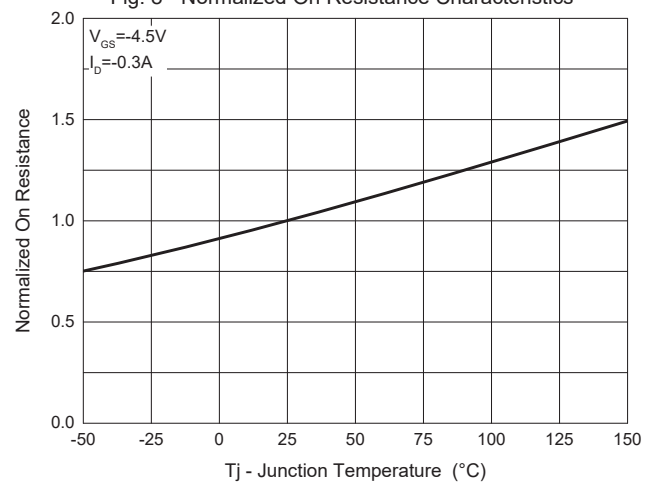


Fig. 9 - $I_S - V_{SD}$

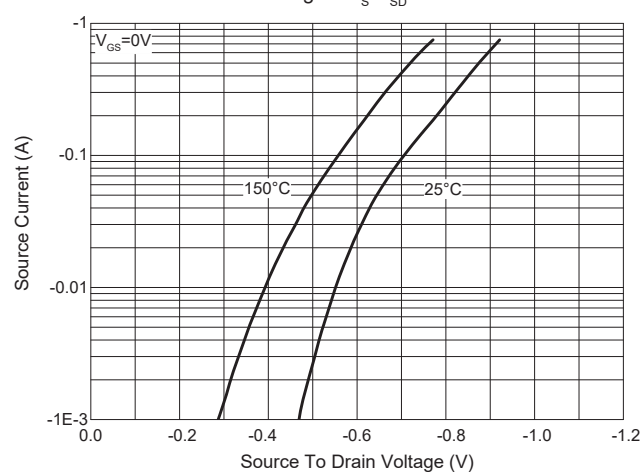


Fig. 10 - Drain Current

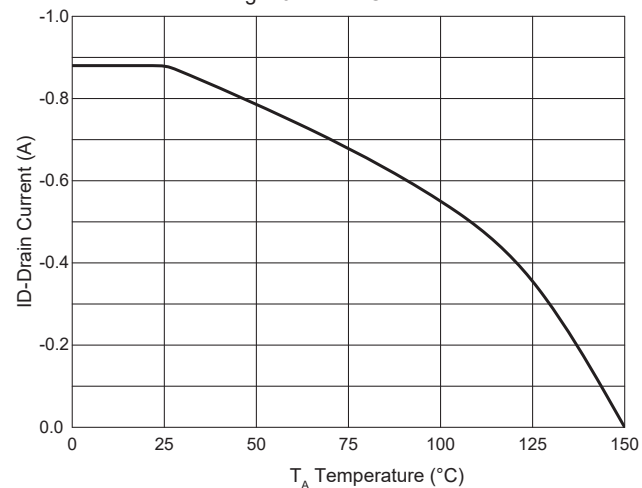
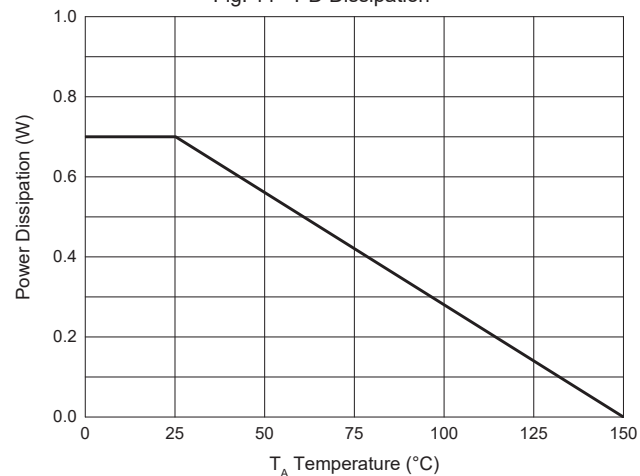


Fig. 11 - PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

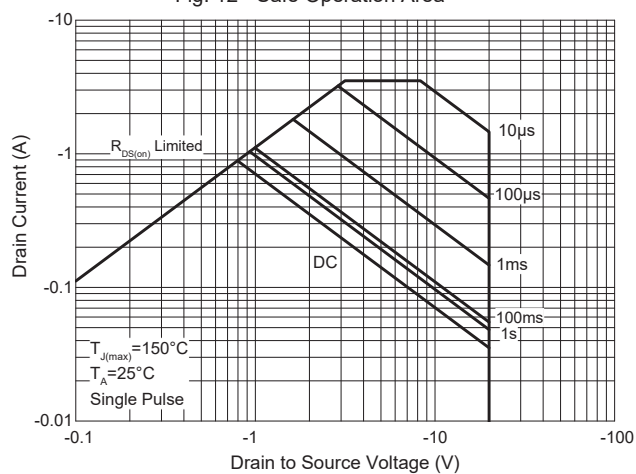
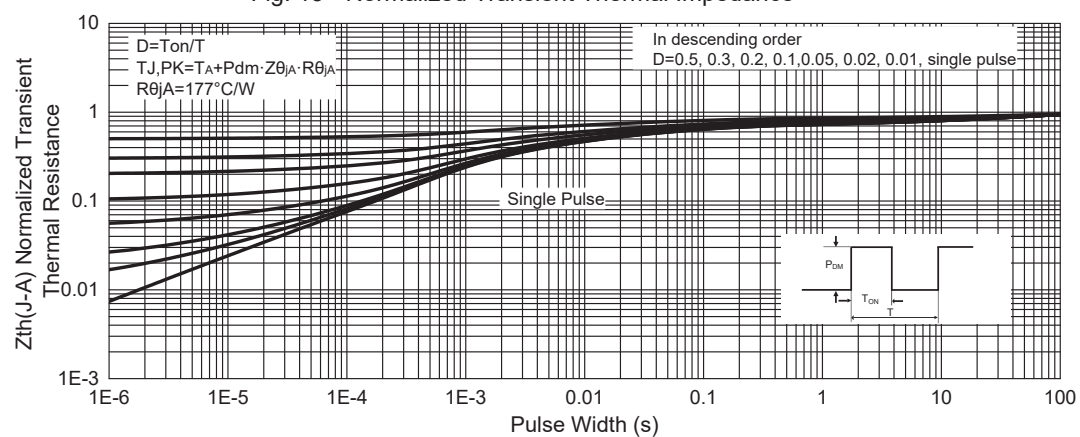


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel:10Kpcs/Reel
Part Number-TPQ3	Tape&Reel:10Kpcs/Reel

For packaging details, go to our website at <https://www.mccsemi.com/pdf/productpackaging/DFN1006-3%20Package.pdf>

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