Features

- ESD Protected Up To 2KV (HBM)
- Low Threshold Voltage
- Moisture Sensitivity Level 3
- 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)

N-Channel MOSFET

Maximum Ratings

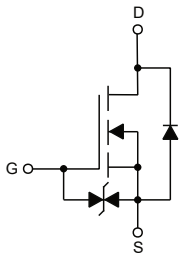
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature: -55°C to +150°C
- Maximum Thermal Resistance: 382°C/W Junction to Ambient(Note 2)

Parameter		Symbol	Rating	Unit
Drain -source Voltage		V_{DS}	60	V
Gate -Source Voltage		V_{GS}	±20	V
Drain Current-Continuous	T_A=25°C	I_D	0.26	A
	T_A=70°C		0.21	
Pulsed Drain Current		I_{DM}	1.04	A
Power Dissipation		P_D	0.33	W

Note:

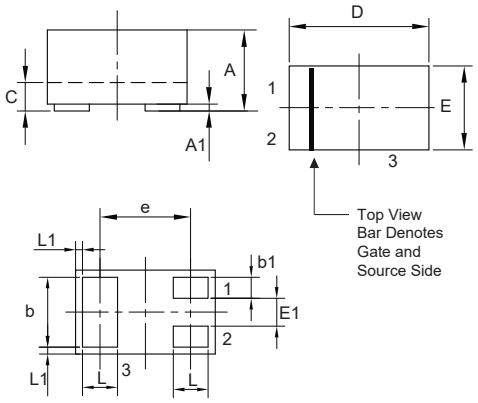
1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A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

Internal Structure and Marking Code



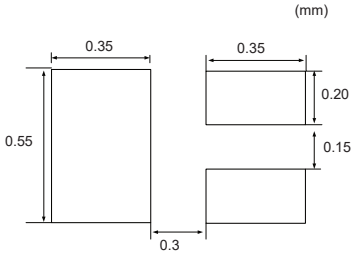
1. GATE
2. SOURCE
3. DRAIN

DFN1006-3



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.017	0.022	0.42	0.55	
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	
c	0.005	0.007	0.12	0.18	
D	0.037	0.041	0.95	1.05	
E	0.022	0.026	0.55	0.65	
E1	0.006	0.010	0.15	0.25	
e	0.026 BSC		0.65BSC		
L	0.008	0.012	0.20	0.30	
L1	0.0002 REF		0.05 REF		

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=250μA	60			V
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS} =±20V			±10	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.0	1.5	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=300mA		1.8	2.5	Ω
		V_{GS}=4.5V, I_D=200mA		2.0	3.0	
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=200mA		300		mS
Gate Resistance	R_g	f=1 MHz, Open drain		100		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				0.26	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=300mA			1.2	V
Reverse Recovery Time	t_{rr}	I_F=0.3A, dI_F/dt=100A/μs		10		ns
Reverse Recovery Charge	Q_{rr}			2.6		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V,f=1MHz		15		pF
Output Capacitance	C_{oss}			3		
Reverse Transfer Capacitance	C_{rss}			2		
Total Gate Charge	Q_g	V_{DS}=30V,V_{GS}=10V,I_D=0.3A		0.9		nC
Gate-Source Charge	Q_{gs}			0.15		
Gate-Drain Charge	Q_{gd}			0.25		
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=50V, V_{GS}=10V , R_G=50Ω, I_D=0.3A		3		ns
Turn-On Rise Time	t_r			3.8		
Turn-Off Delay Time	$t_{d(off)}$			10		
Turn-Off Fall Time	t_f			30		

Curve Characteristics

Fig.1 - Typical Output Characteristics

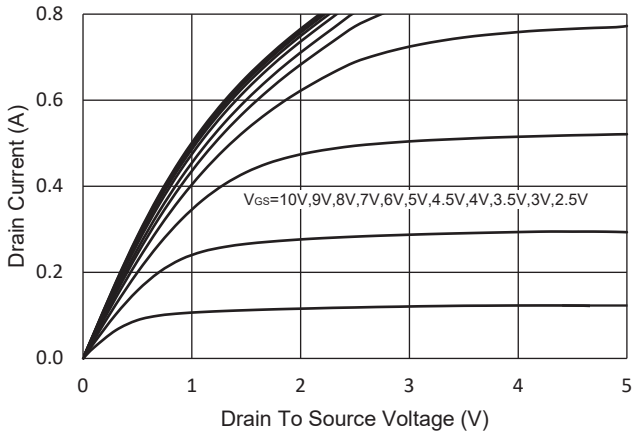


Fig. 2 - Transfer Characteristics

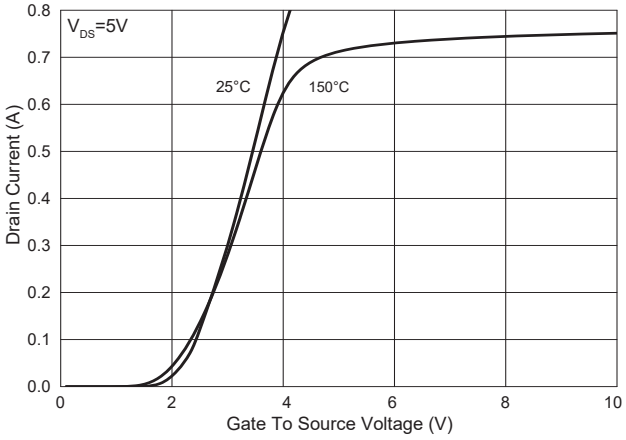


Fig. 3 - $R_{DS(ON)}$—V_{GS}

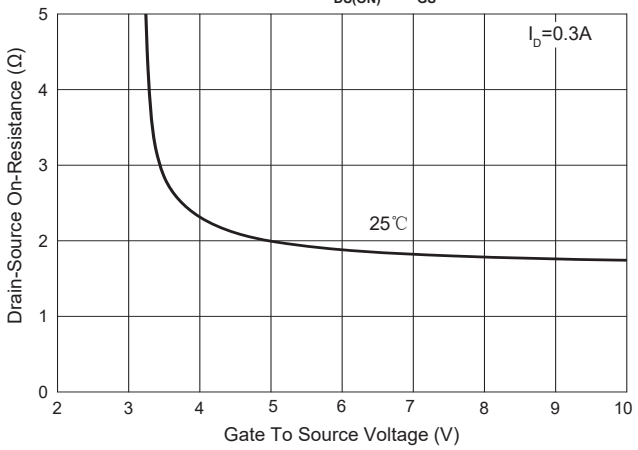


Fig. 4 - $R_{DS(ON)}$—I_D

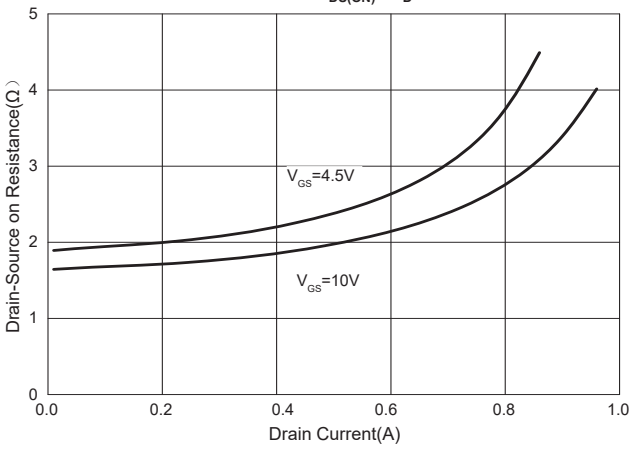


Fig. 5 - Capacitance Characteristics

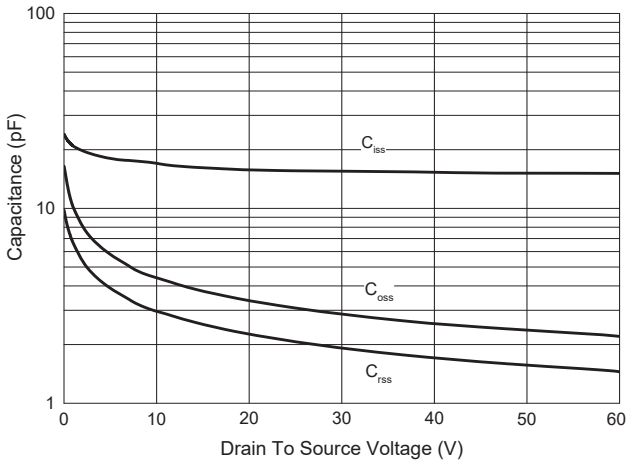
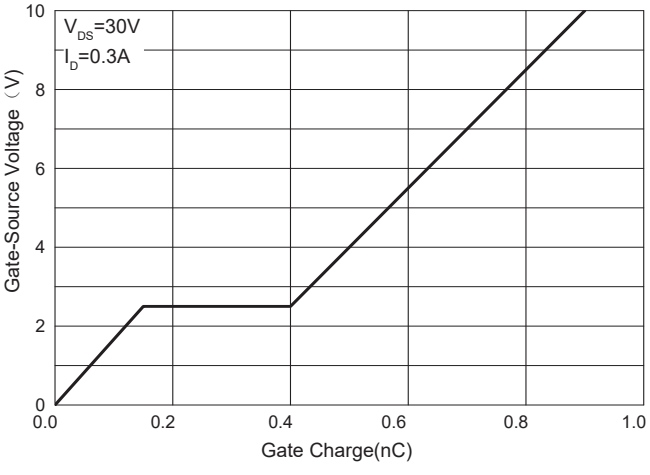


Fig. 6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

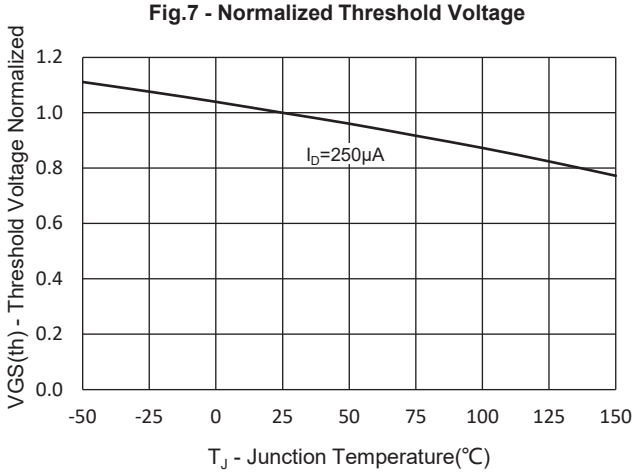


Fig.8 - Normalized On Resistance Characteristics

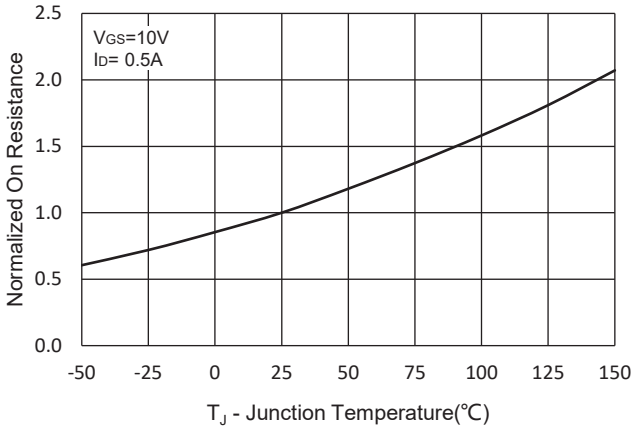


Fig.9 - I_S - V_{SD}

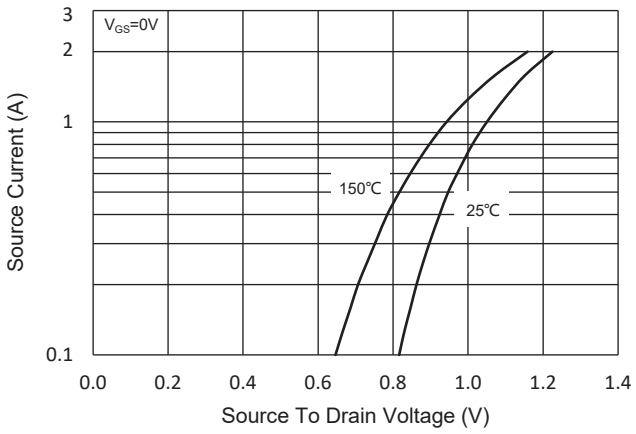


Fig. 10 - Drain Current

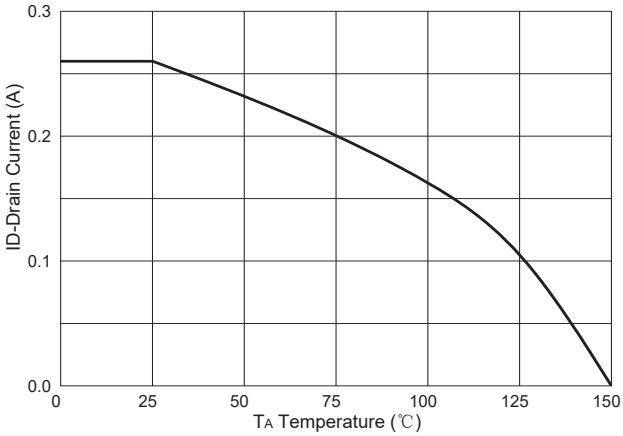
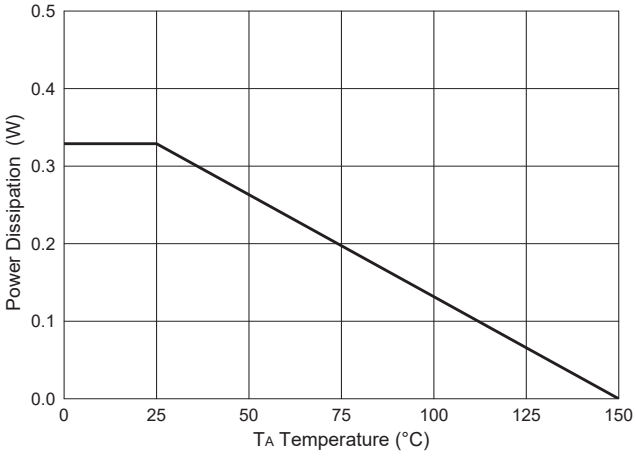


Fig.11-PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

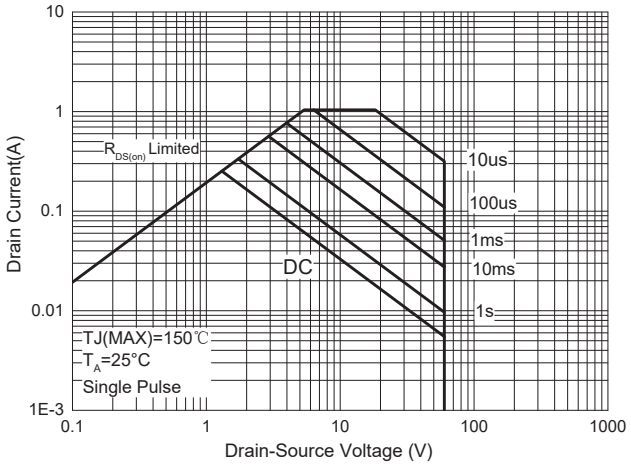
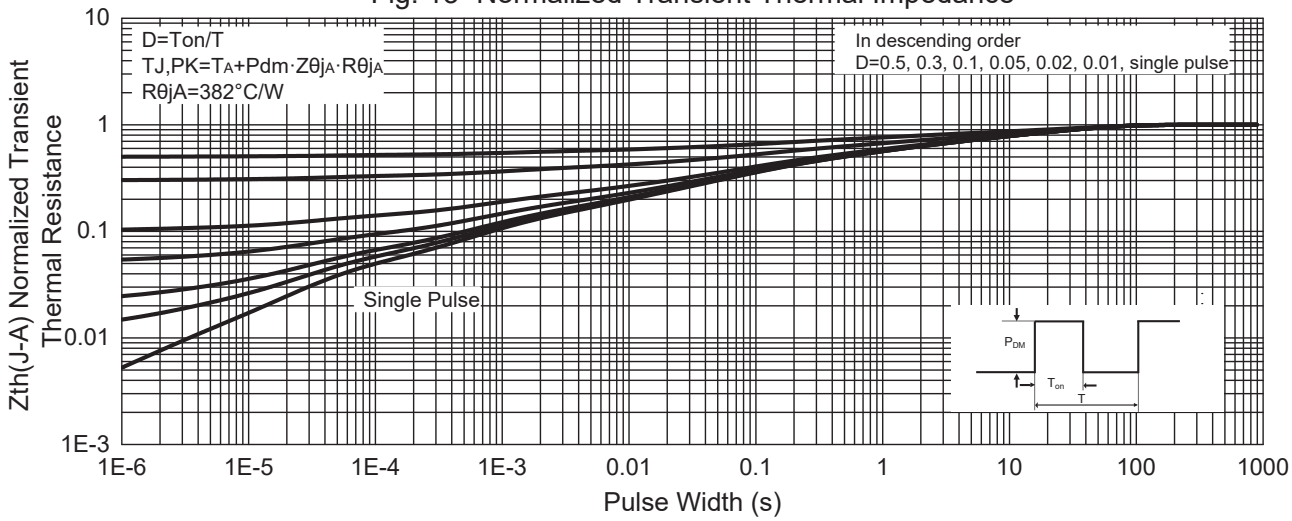


Fig. 13 -Normalized Transient Thermal Impedance



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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