

Features

- ESD Protected up to 2KV(HBM)
- Low Threshold Voltage
- 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

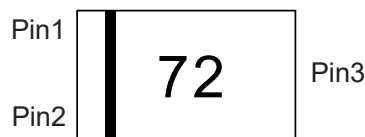
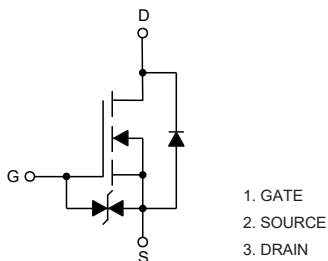
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature: -55°C to +150°C
- Thermal Resistance: 285°C/W Junction to Ambient (Note 2)

Parameter	Symbol	Rating	Unit
Drain -source Voltage	V _{DS}	60	V
Gate -Source Voltage	V _{GS}	±20	V
Drain Current-Continuous	I _D	T _A =25°C	0.41
		T _A =100°C	0.26
Pulsed Drain Current (Note 3)	I _{DM}	1.64	A
Power Dissipation (Note 4)	P _D	0.44	W

Note:

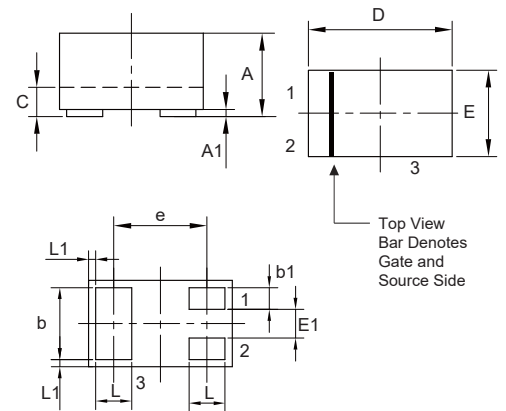
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of R_{θJA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.
3. 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



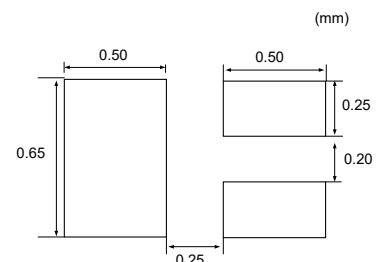
N-Channel MOSFET

DFN1006-3



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.018	0.022	0.45	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	0.042	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 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 (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.3	1.4	2.3	V
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$			100	nA
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=40mA$		1.0	1.5	Ω
		$V_{GS}=4.5V, I_D=35mA$		1.2	1.8	
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=0.41A$		0.7		S
Gate Resistance	R_g	f=1 MHz, Open drain		155		Ω
Dynamic Characteristics						
Continuous Body Diode Current	I_S				0.41	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=0.3A$			1.1	V
Reverse Recovery Time	t_{rr}	$I_F=0.41A, dI_F/dt=100A/\mu s$		9		ns
Reverse Recovery Charge	Q_{rr}				2.9	
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		25		μF
Output Capacitance	C_{oss}			4		
Reverse Transfer Capacitance	C_{rss}			1.8		
Total Gate Charge	Q_g	$V_{DS}=50V, V_{GS}=10V, I_D=1A$		1.1		nC
Gate-Source Charge	Q_{gs}			0.2		
Gate-Drain Charge	Q_{gd}			0.35		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=50V, V_{GS}=10V,$ $R_G=6\Omega, I_D=1A$		4.4		ns
Turn-On Rise Time	t_r			4.3		
Turn-Off Delay Time	$t_{d(off)}$			14		
Turn-Off Fall Time	t_f			11		

Curve Characteristics

Fig.1 - Typical Output Characteristics

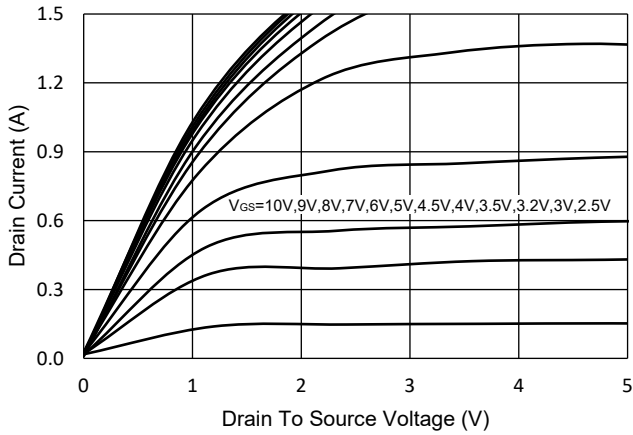


Fig.2 - Transfer Characteristic

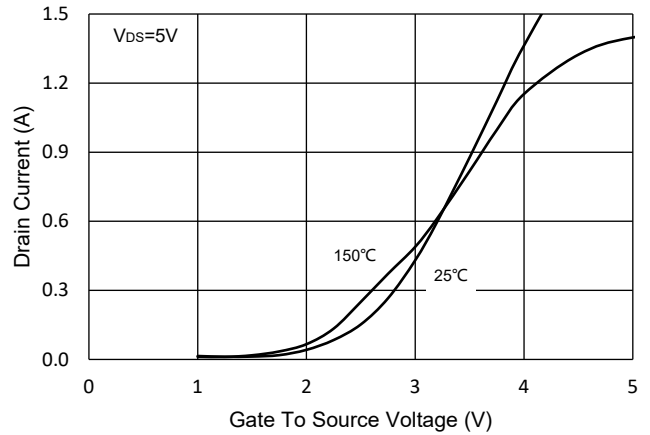


Fig.3 - $R_{DS(ON)}$ - V_{GS}

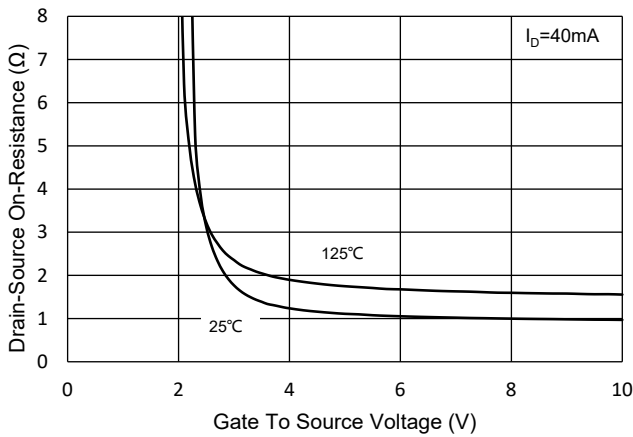


Fig.4 - $R_{DS(ON)}$ - I_D

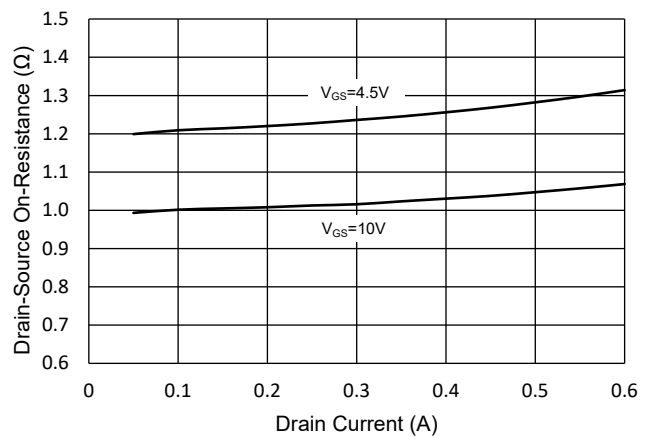


Fig.5 - Capacitance Characteristics

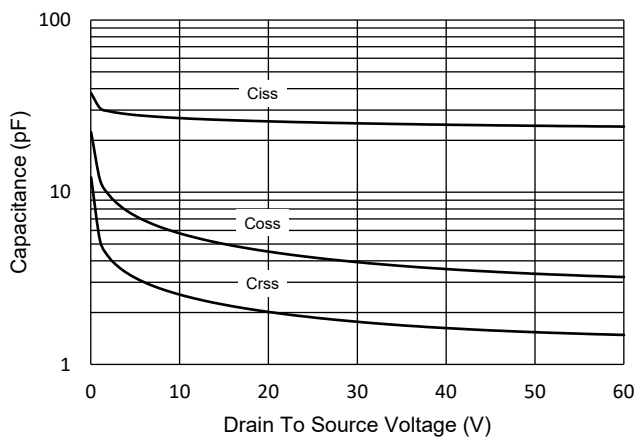
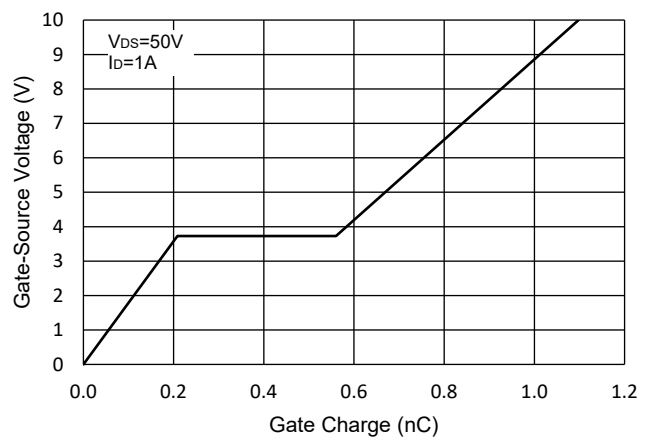


Fig.6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

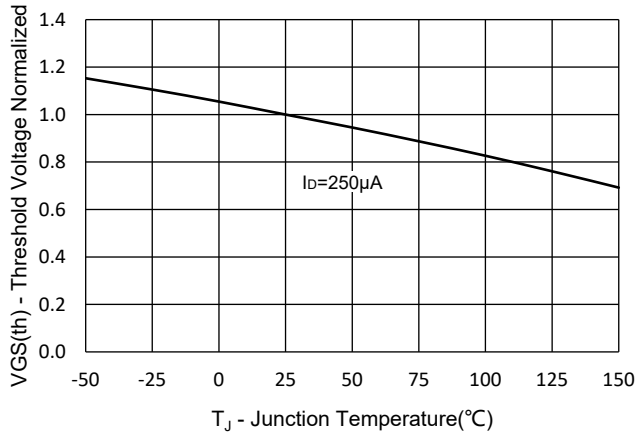


Fig.8 - Normalized On Resistance Characteristics

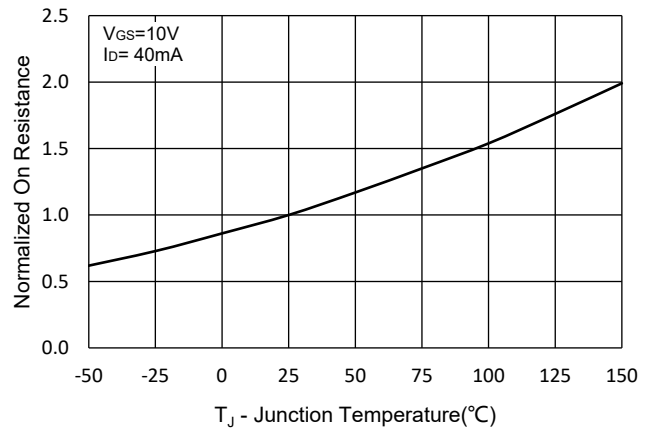


Fig.9 - I_S - V_{SD}

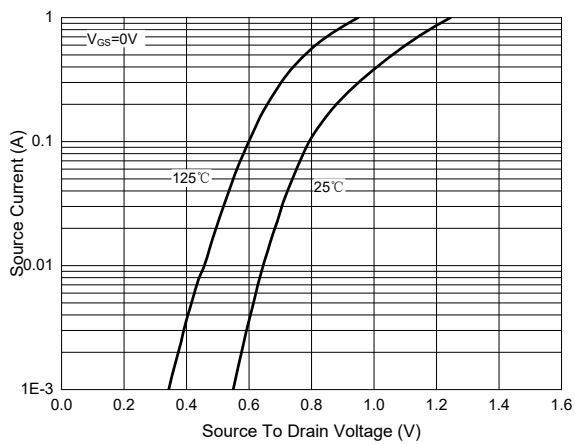


Fig.10 - Drain Current

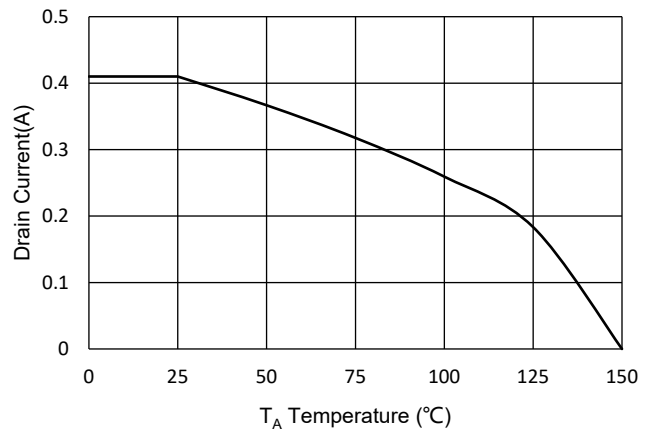
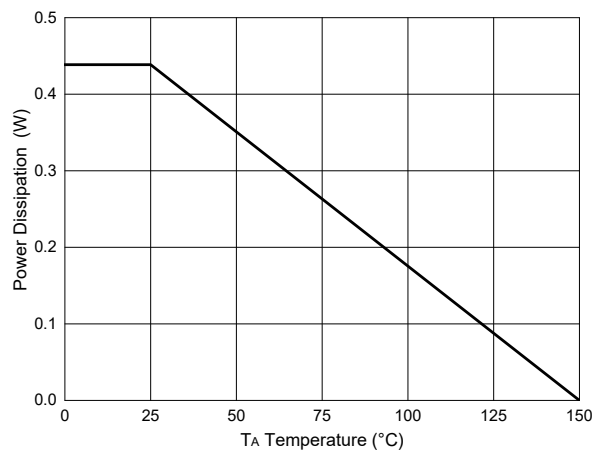


Fig.11 - PD Dissipation



Curve Characteristics

Fig.12 - Safe Operation Area

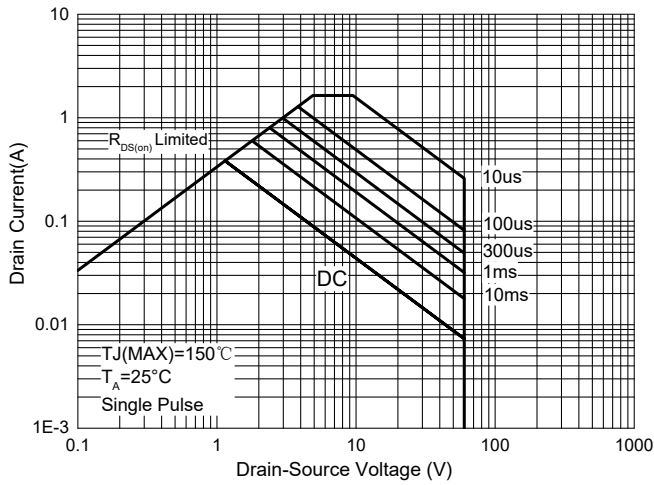
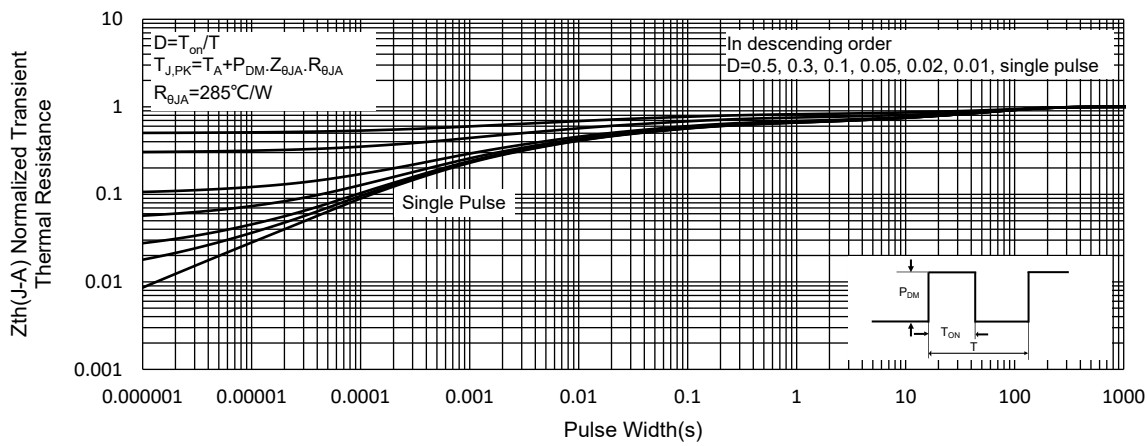


Fig.13 - Normalized Transient Thermal Impedance



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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