

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

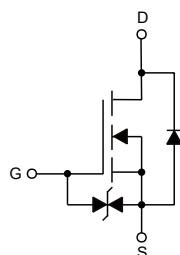
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature: -55°C to +150°C
- Thermal Resistance: 285°C/W Junction to Ambient (Note 2)

Parameter		Symbol	Rating	Unit
Drain -source Voltage		V _{DS}	60	V
Gate -Source Voltage		V _{GS}	±20	V
Drain Current-Continuous	T _A =25°C	I _D	0.41	A
	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 $R_{\theta JA}$ 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-ambient thermal resistance.

Internal Structure and Marking Code

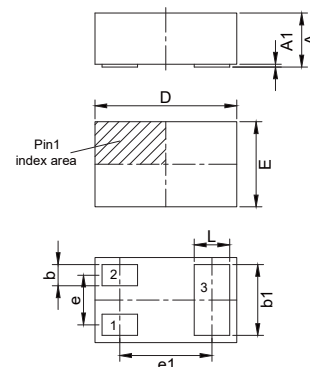


1. GATE
2. SOURCE
3. DRAIN



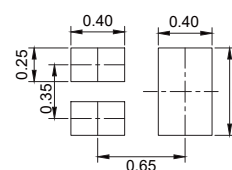
N-Channel MOSFET

DFN1006-3A



DIM	INCH		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.012	0.016	0.31	0.40	
A1	0.000	0.002	0.00	0.05	
b	0.004	0.008	0.10	0.20	x2
b1	0.018	0.022	0.45	0.55	
D	0.037	0.041	0.95	1.05	
E	0.022	0.026	0.55	0.65	
e	0.014		0.35		TYP
e1	0.026		0.65		TYP
L	0.008	0.012	0.20	0.30	x3

Suggested Pad Layout (Unit:mm)



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 =250μA	60			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.3	1.4	2.3	V
Gate-Body Leakage Current	I _{GSS}	V _{GS} =± 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/μs		9		ns
Reverse Recovery Charge	Q _{rr}			2.9		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz		25		pF
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 =6Ω, 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

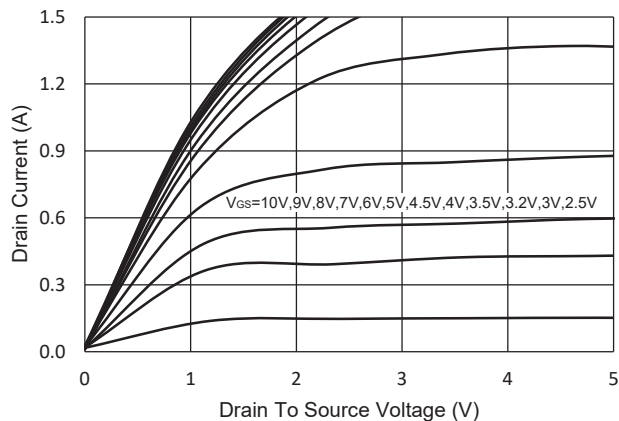


Fig.2 - Transfer Characteristic

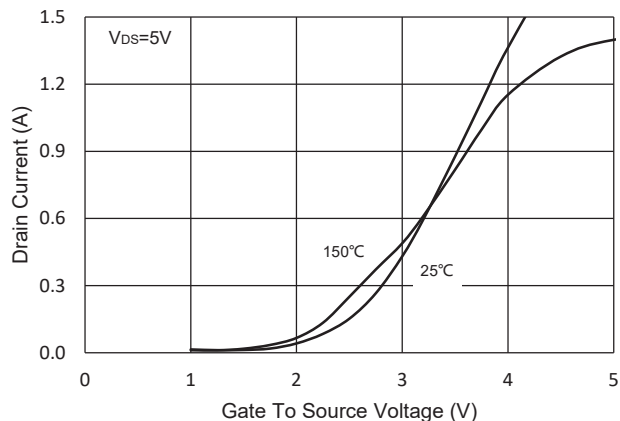


Fig.3 - $R_{DS(ON)}$ - V_{GS}

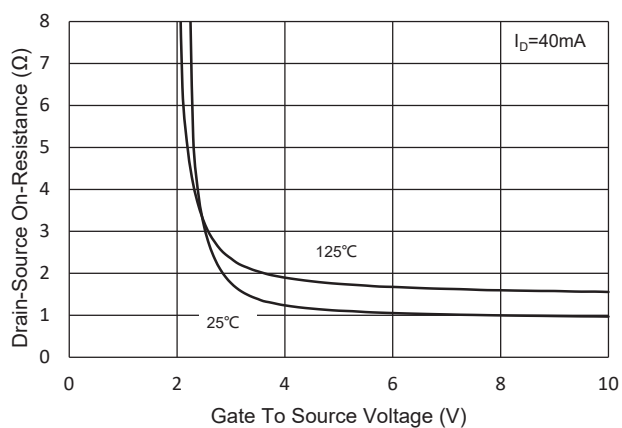


Fig.4 - $R_{DS(ON)}$ - I_D

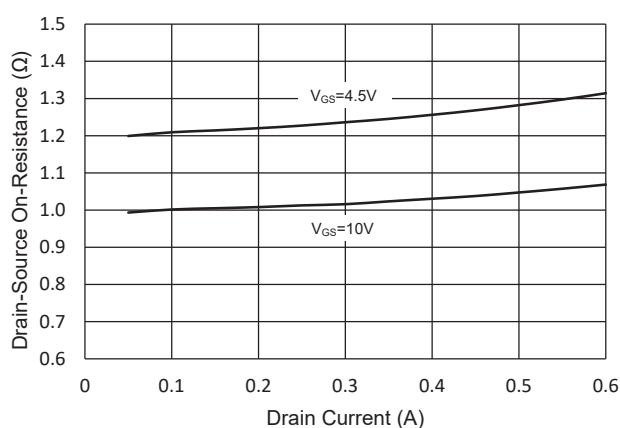


Fig.5 - Capacitance Characteristics

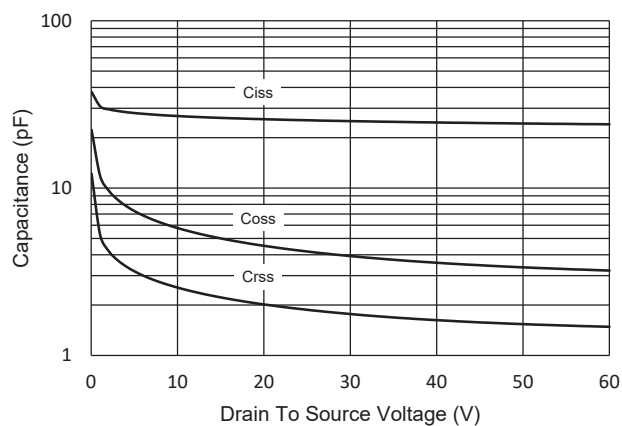
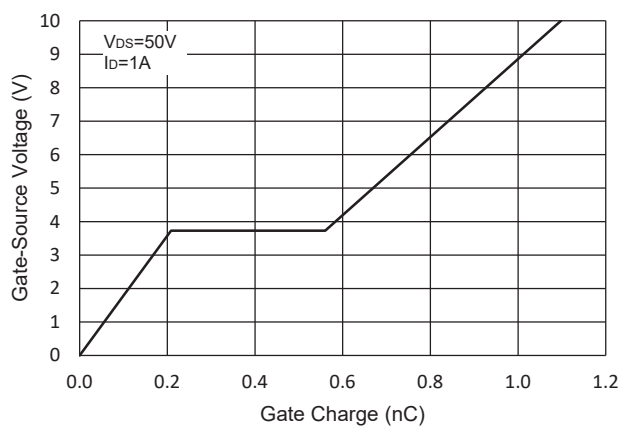


Fig.6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

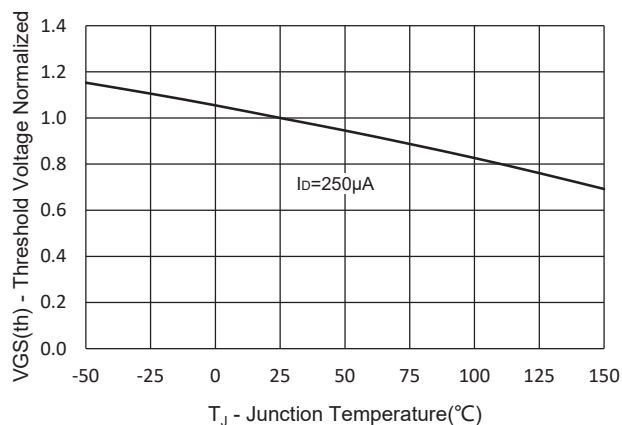


Fig.8 - Normalized On Resistance Characteristics

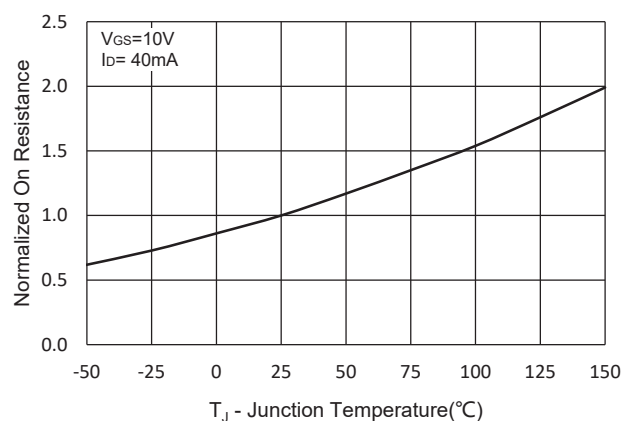


Fig.9 - $I_S - V_{SD}$

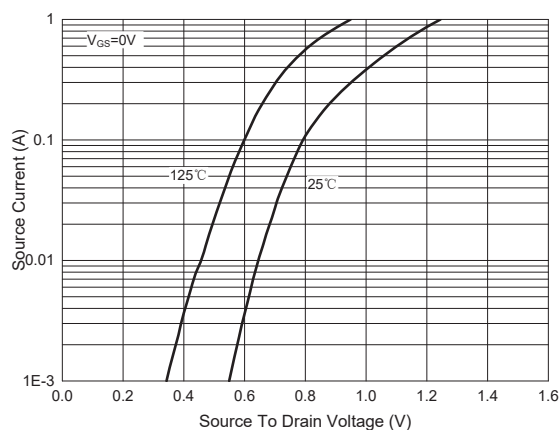


Fig.10 - Drain Current

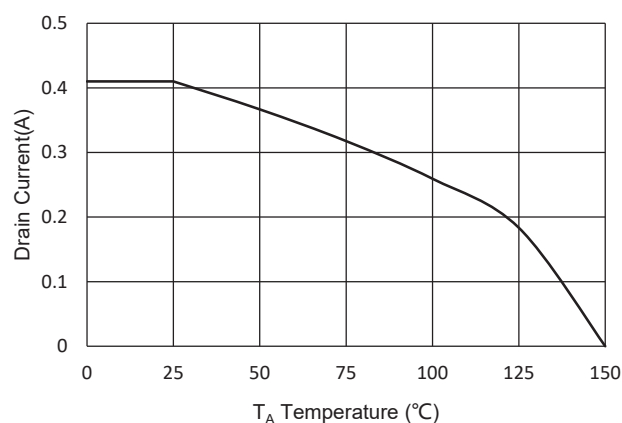
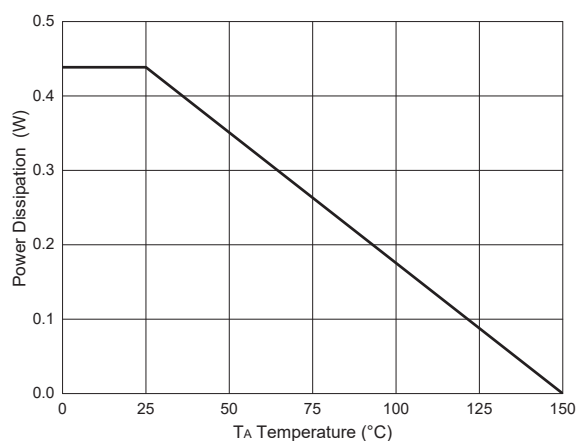


Fig.11 - PD Dissipation



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/DFN1006-3A_Package_Rev_1.pdf

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