

Features

- Split Gate Trench MOSFET Technology
- Low Thermal Resistance
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant^(Note2) ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

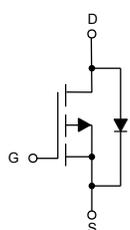
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 40°C/W Junction to Ambient^(Note3)
- Thermal Resistance: 0.55°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	-130
		$T_C=100^\circ\text{C}$	-82
Pulsed Drain Current ^(Note4)	I_{DM}	-520	A
Total Power Dissipation ^(Note5)	P_D	227	W
Single Pulse Avalanche Energy ^(Note6)	E_{AS}	1225	mJ

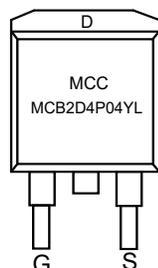
Note:

1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. High Temperature Solder Exemption Applied, see EU Directive Annex 7(a)-I.
3. 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 $T_A=25^\circ\text{C}$.
4. Repetitive rating; pulse width limited by max. junction temperature.
5. P_D is based on max. junction temperature, using junction-case thermal resistance.
6. $T_J=25^\circ\text{C}$, $V_{DD}=-50\text{V}$, $V_{GS}=-10\text{V}$, $R_G=25\Omega$, $L=0.5\text{mH}$.

Internal Structure and Marking Code

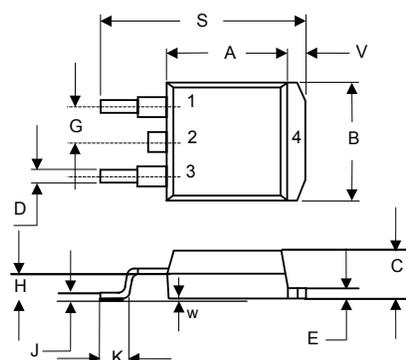


1. Gate
- 2,4. Drain
3. Source



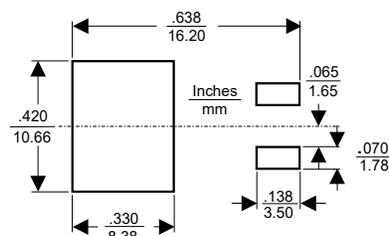
P-CHANNEL MOSFET

D2-PAK



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.331	0.370	8.40	9.40	
B	0.378	0.417	9.60	10.60	
C	0.165	0.189	4.20	4.80	
D	0.027	0.037	0.68	0.94	
E	0.045	0.055	1.14	1.40	
G	0.10		2.54		TYP.
H	0.096	0.134	2.43	3.40	
J	0.011	0.025	0.28	0.64	
K	0.071	0.131	1.80	3.32	
S	0.575	0.625	14.60	15.87	
V	0.042	0.058	1.07	1.47	
W	0.000	0.010	0.00	0.25	

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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-40			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-40V, V_{GS}=0V$			-1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.8	-2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-50A$		1.9	2.4	m Ω
		$V_{GS}=-4.5V, I_D=-20A$		2.5	3.5	
Gate Resistance	R_g	f=1 MHz, Open drain		2.1		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				-130	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-50A$			-1.2	V
Reverse Recovery Time	t_{rr}	$I_F=-50A, di_F/dt=100A/\mu s$		78		ns
Reverse Recovery Charge	Q_{rr}			125		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=-20V, V_{GS}=0V, f=1MHz$		11266		pF
Output Capacitance	C_{oss}			6073		
Reverse Transfer Capacitance	C_{rss}			227		
Total Gate Charge	Q_g	$V_{DS}=-20V, V_{GS}=-10V, I_D=-50A$		178		nC
Gate-Source Charge	Q_{gs}			36		
Gate-Drain Charge	Q_{gd}			29		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-20V, V_{GS}=-10V, R_G=3\Omega, I_{DS}=-50A$		22		ns
Turn-On Rise Time	t_r			99		
Turn-Off Delay Time	$t_{d(off)}$			142		
Turn-Off Fall Time	t_f			69		

Curve Characteristics

Fig.1 - Typical Output Characteristics

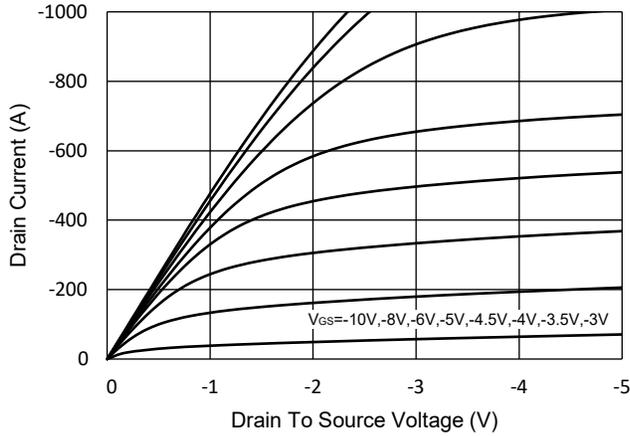


Fig.2 - Transfer Characteristics

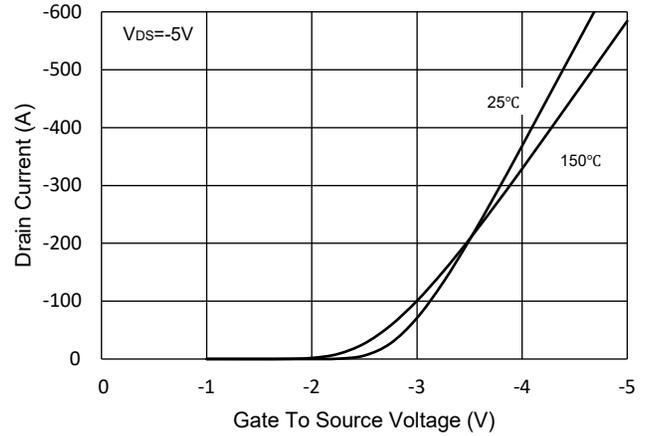


Fig.3 - $R_{DS(ON)}$ - V_{GS}

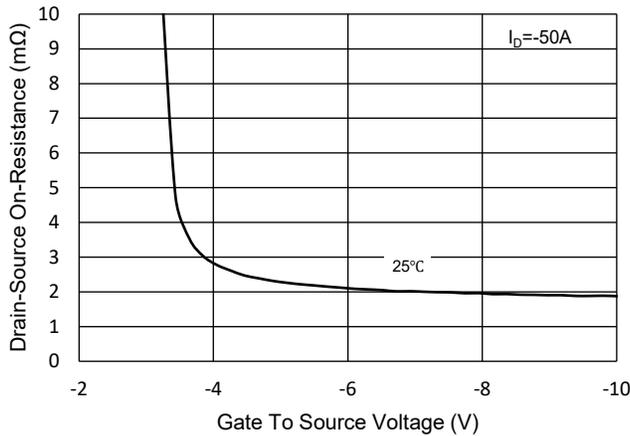


Fig.4 - $R_{DS(ON)}$ - I_D

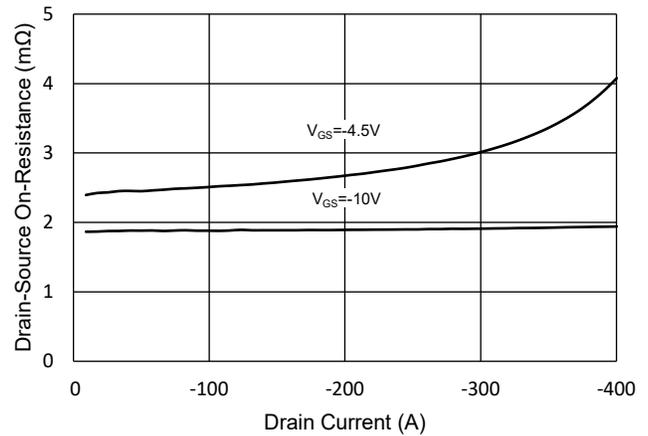


Fig.5 - Capacitance Characteristics

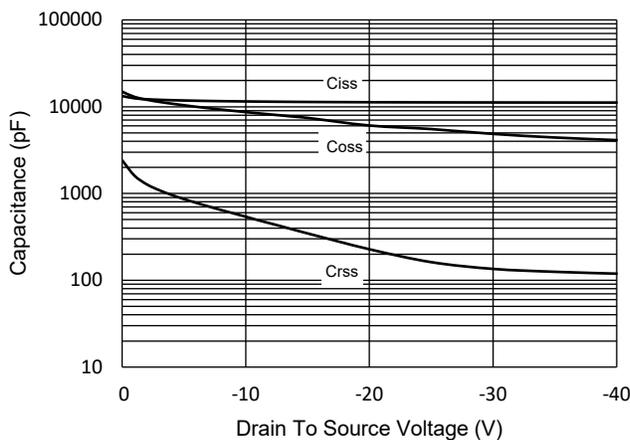
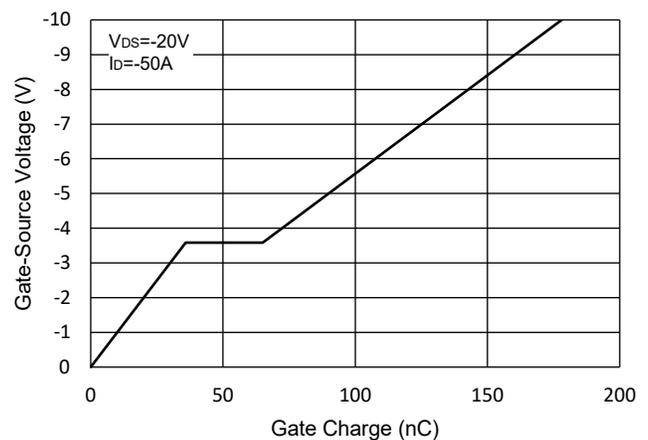


Fig.6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

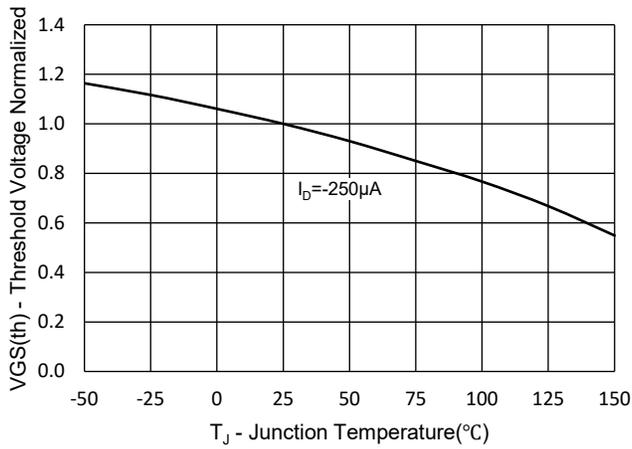


Fig.8 - Normalized On Resistance Characteristics

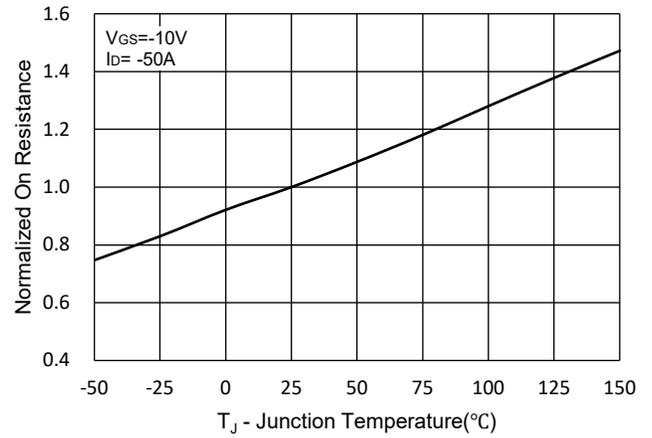


Fig.9 - $I_S - V_{SD}$

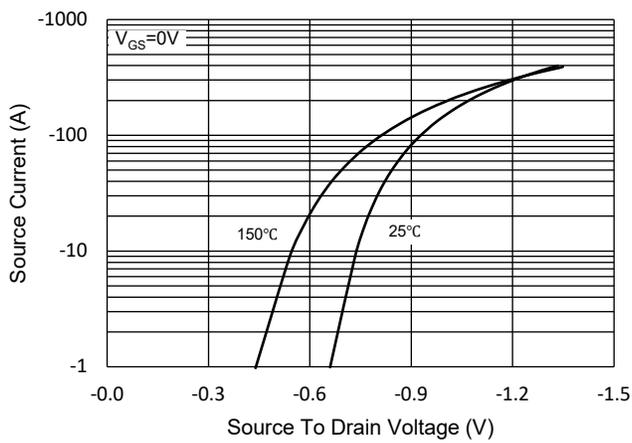


Fig.10 - Drain Current

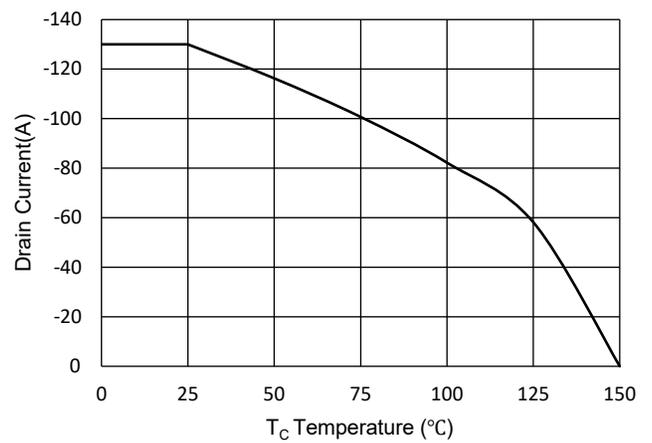
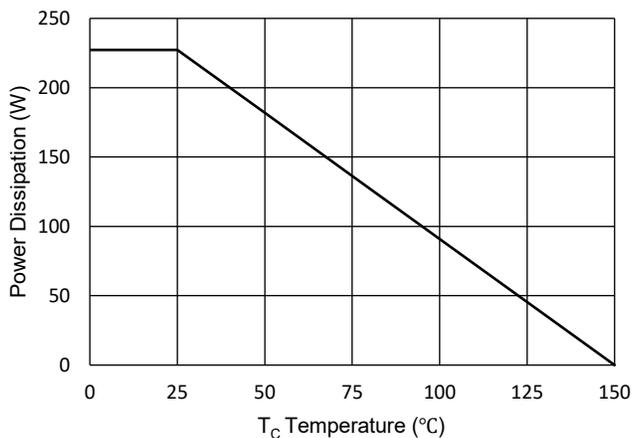


Fig.11 - PD Dissipation



Curve Characteristics

Fig.12 - Safe Operation Area

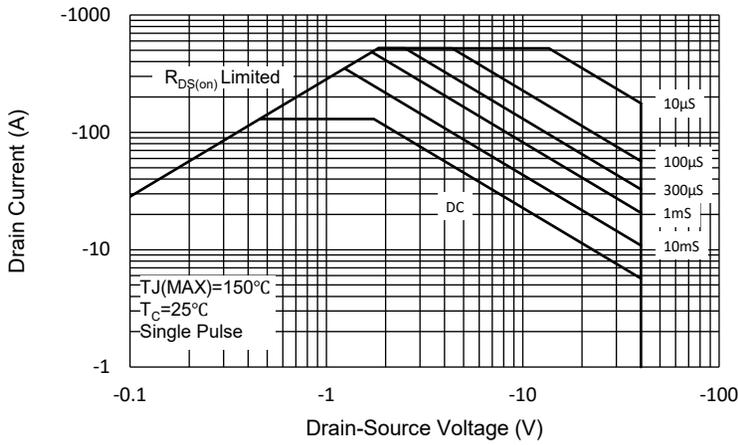
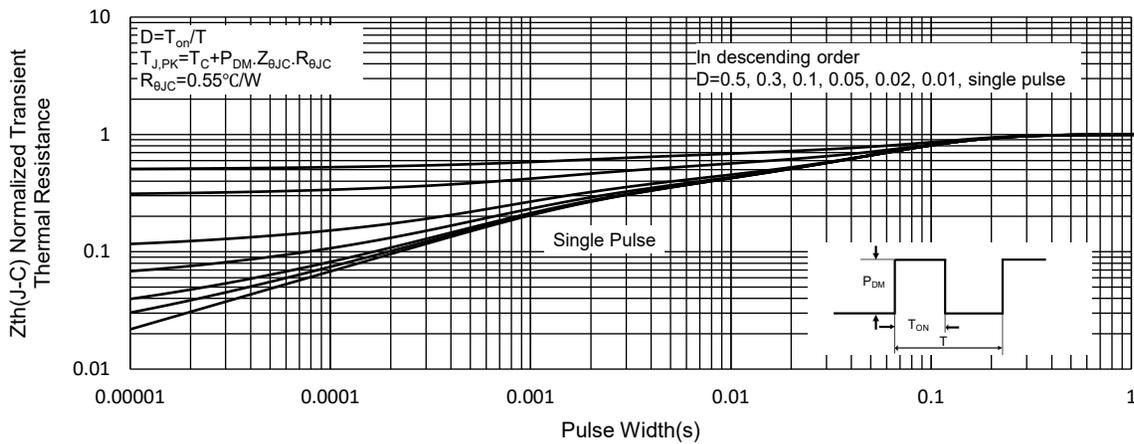


Fig.13 - Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 800pcs/Reel

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