

Features

- Split Gate Trench MOSFET Technology
- Excellent Package for Heat Dissipation
- High Density Cell Design for Low $R_{DS(ON)}$
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)
- Moisture Sensitivity Level 1

Maximum Ratings

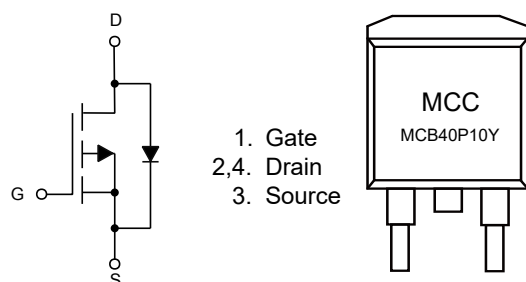
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 1°C/W Junction to Case
- Thermal Resistance: 15°C/W Junction to Ambient ($t \leq 10s$)⁽¹⁾
- Thermal Resistance: 60°C/W Junction to Ambient (Steady-State)⁽¹⁾

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-40	A
Pulsed Drain Current ⁽²⁾	I_{DM}	-130	A
Total Power Dissipation ⁽³⁾	P_D	125	W
Single Pulsed Avalanche Energy ⁽⁴⁾	E_{AS}	162	mJ

Note:

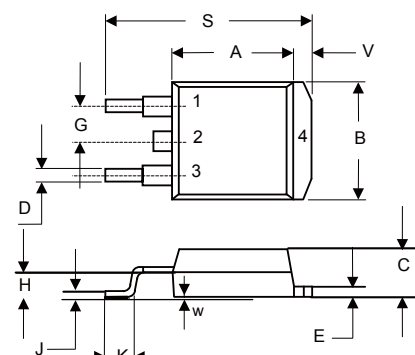
1. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$. The Power dissipation P_{DSM} is based on $R_{\theta JA} \leq 10s$ and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. P_D is based on max. junction temperature, using junction-case thermal resistance.
4. $V_{DD}=50V$, $R_G=25\Omega$, $L=0.5mH$, starting $T_J=25^\circ\text{C}$.

Internal Structure and Marking Code



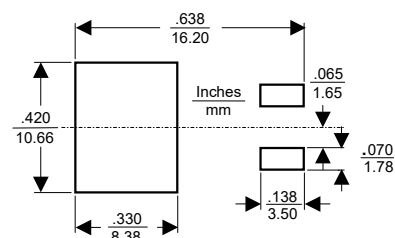
P-CHANNEL MOSFET

D2-PAK



DIM	INCHES		MM		NOTE
	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	0.010		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 =-250μA	-100			V
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-100V, V _{GS} =0V			1	μA
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1	-1.8	-2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-15A		42	56	mΩ
		V _{GS} =-4.5V, I _D =-7A		46	62	mΩ
Diode Characteristics						
Continuous Body Diode Current	I _S				-40	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =-15A			-1.3	V
Reverse Recovery Time	t _{rr}	I _S =-5A, dI _F /dt=100A/μs		104		ns
Reverse Recovery Charge	Q _{rr}			280		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =-50V,V _{GS} =0V,f=1MHz		2100		pF
Output Capacitance	C _{oss}			236		
Reverse Transfer Capacitance	C _{rss}			48		
Total Gate Charge	Q _g	V _{DS} =-50V,V _{GS} =-10V,I _D =-5A		40		nC
Gate-Source Charge	Q _{gs}			7.8		
Gate-Drain Charge	Q _{gd}			8.6		
Turn-On Delay Time	t _{d(on)}	V _{GS} =-10V, V _{DD} =-50V,I _D =-5A R _{GEN} =6Ω		13		ns
Turn-On Rise Time	t _r			39		
Turn-Off Delay Time	t _{d(off)}			100.1		
Turn-Off Fall Time	t _f			105.3		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

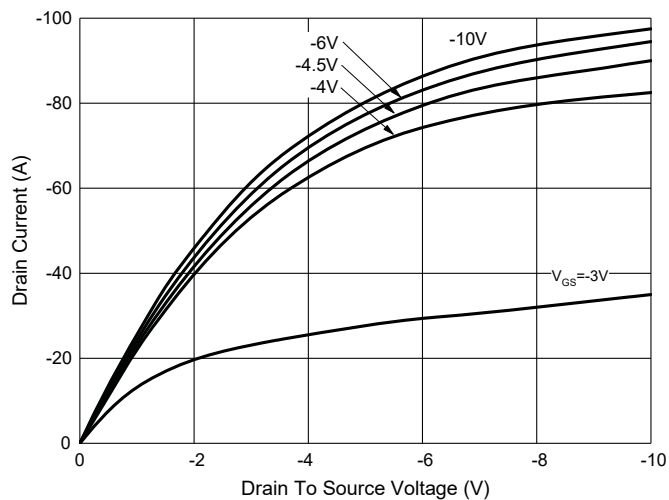


Fig. 2 - Transfer Characteristics

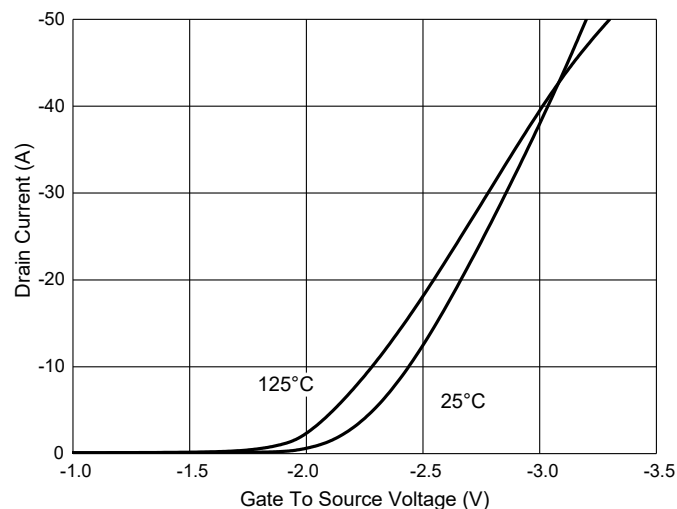


Fig. 3 - $R_{DS(ON)} - V_{GS}$

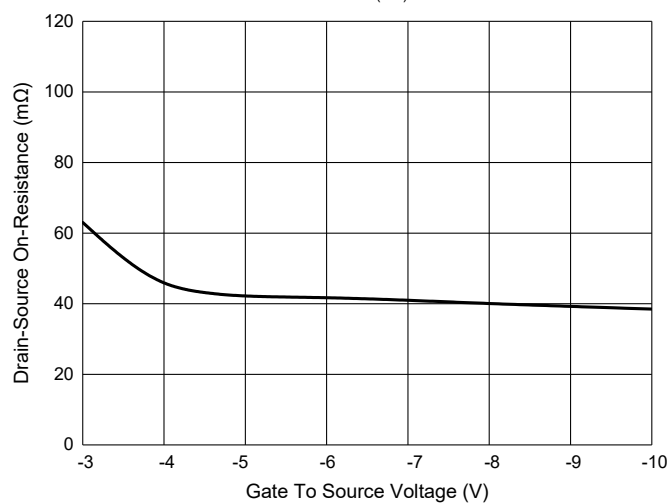


Fig. 4 - Normalized On Resistance Characteristics

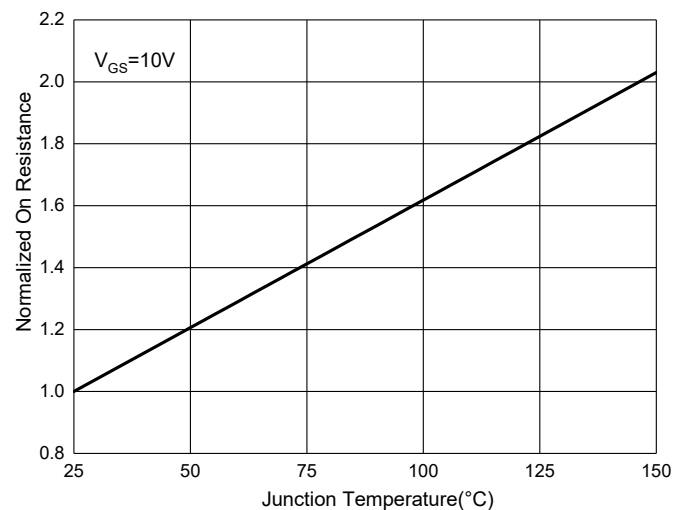


Fig. 5 - Capacitance Characteristics

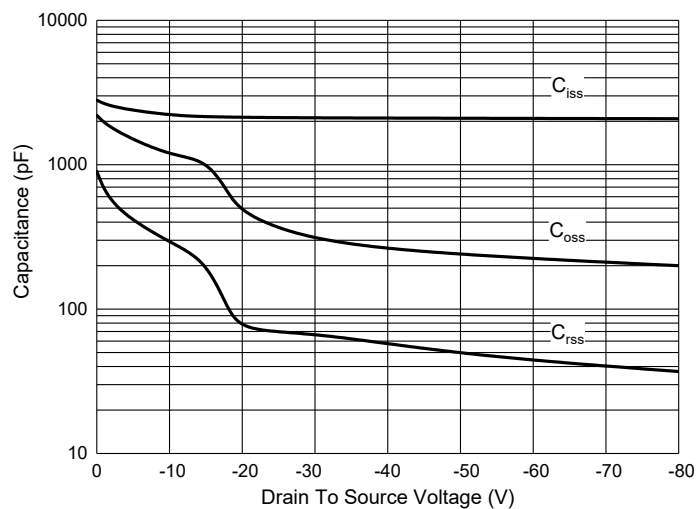
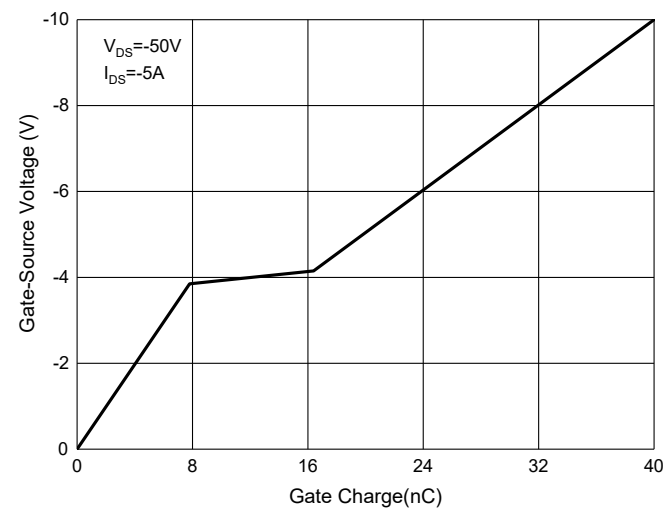


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Safe Operation Area

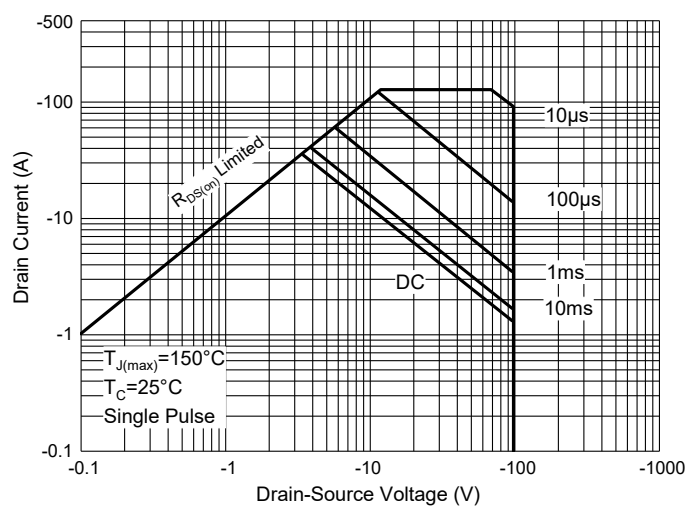
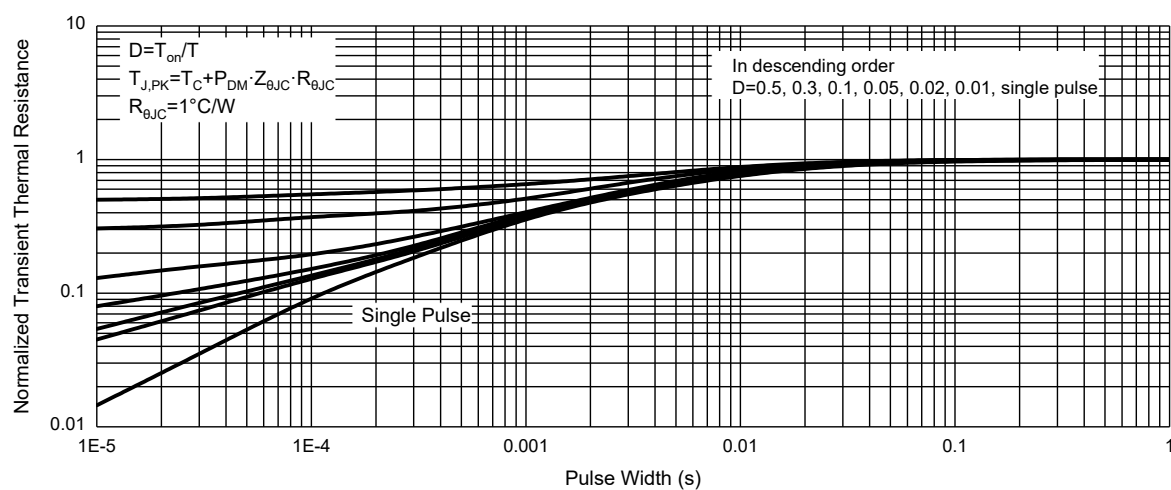


Fig. 8 - Normalized Transient Thermal Impedance



Ordering Information

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

Note : Adding "-HF" Suffix for Halogen Free, eg. Part Number-TP-HF

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