

## Features

- Low RDS(on) & FOM
- Extremely Low Switching Loss
- Excellent Stability and Uniformity
- Fast Switching and Soft Recovery
- 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 ≤ 10s)<sup>(1)</sup>
- Thermal Resistance: 60°C/W Junction to Ambient (Steady-State)<sup>(1)</sup>

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V <sub>DS</sub>	100	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current <sup>(2)</sup>	I <sub>D</sub>	T <sub>C</sub> =25°C	70 A
		T <sub>C</sub> =100°C	44 A
Pulsed Drain Current <sup>(3)</sup>	I <sub>DM</sub>	280	A
Total Power Dissipation <sup>(4)</sup>	P <sub>D</sub>	125	W
Single Pulsed Avalanche Energy <sup>(5)</sup>	E <sub>AS</sub>	200	mJ

Note:

1. The value of R<sub>θJA</sub> is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub> = 25°C. The Power dissipation P<sub>DSM</sub> is based on R<sub>θJA</sub> t ≤ 10s and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.

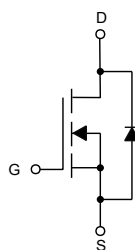
2. The maximum current rating is package limited.

3. Repetitive rating; pulse width limited by max. junction temperature.

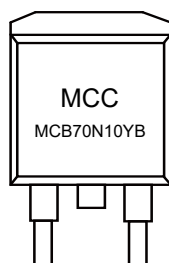
4. P<sub>D</sub> is based on max. junction temperature, using junction-case thermal resistance.

5. V<sub>DD</sub>=50V, R<sub>G</sub>=25Ω, L=0.5mH, starting T<sub>J</sub>=25 °C.

## Internal Structure and Marking Code

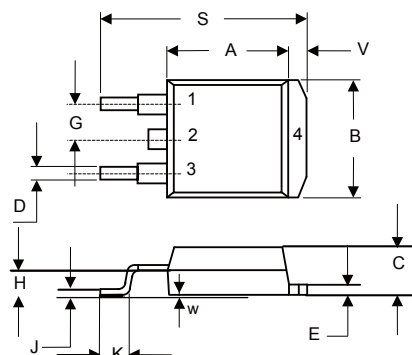


1. Gate
- 2,4. Drain
3. Source



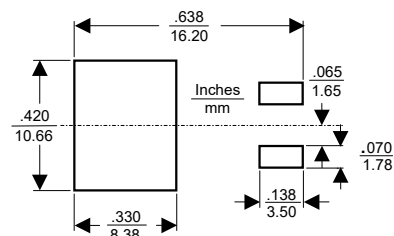
# N-CHANNEL MOSFET

## 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
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	2.8	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		7.2	8.6	m $\Omega$
		$V_{GS}=6V, I_D=20A$		10	13	m $\Omega$
Gate Resistance	$R_g$	f=1MHz, Open drain		0.68		$\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				70	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=20A$			1.3	V
Reverse Recovery Time	$t_{rr}$	$I_S=20A, dI_F/dt=100A/\mu s$		51.5		ns
Reverse Recovery Charge	$Q_{rr}$			84		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=50V, V_{GS}=0V, f=1MHz$		2270		pF
Output Capacitance	$C_{oss}$			797		
Reverse Transfer Capacitance	$C_{rss}$			36		
Total Gate Charge	$Q_g$	$V_{DS}=50V, V_{GS}=10V, I_D=25A$		32		nC
Gate-Source Charge	$Q_{gs}$			11.1		
Gate-Drain Charge	$Q_{gd}$			4.78		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DD}=50V, I_D=25A$ $R_{GEN}=2.2\Omega$		51		ns
Turn-On Rise Time	$t_r$			14.4		
Turn-Off Delay Time	$t_{d(off)}$			69.2		
Turn-Off Fall Time	$t_f$			20.6		

**Curve Characteristics**

Fig. 1 - Typical Output Characteristics

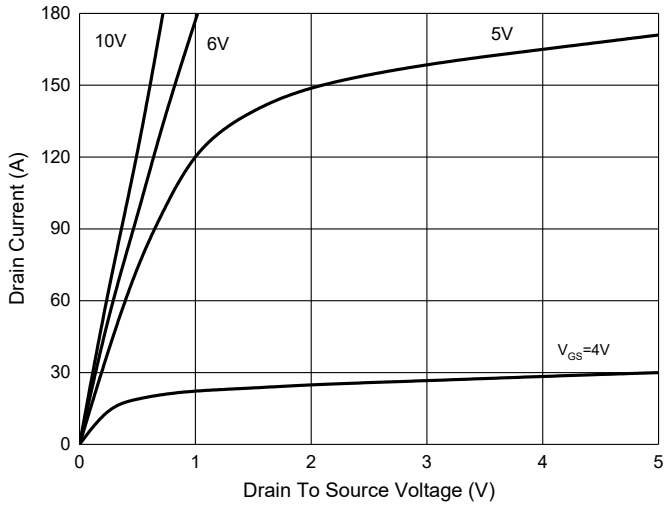


Fig. 2 - Transfer Characteristics

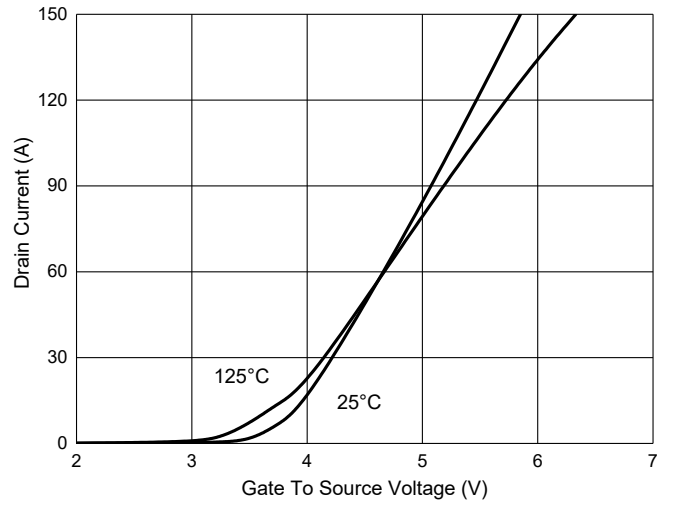


Fig. 3 -  $R_{DS(ON)} - V_{GS}$

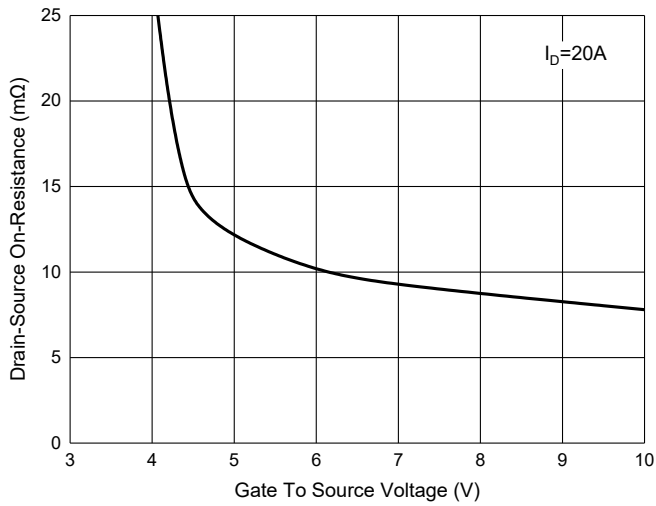


Fig. 4 - Normalized On Resistance Characteristics

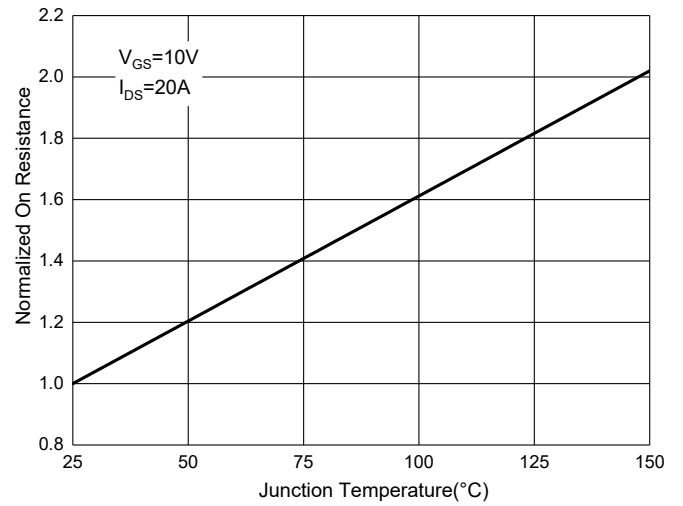


Fig. 5 - Capacitance Characteristics

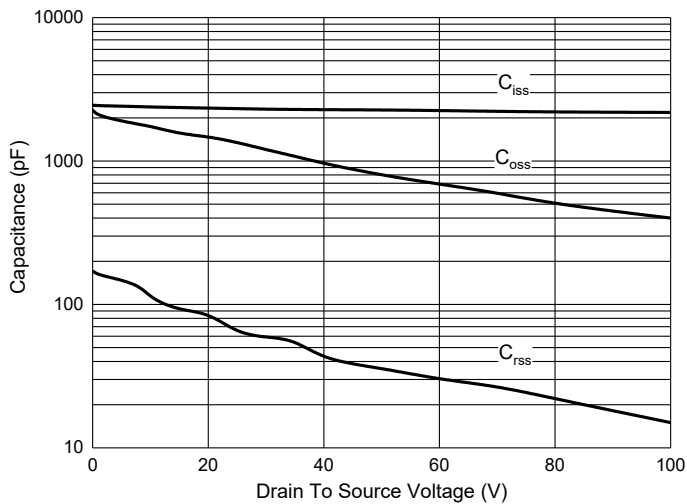
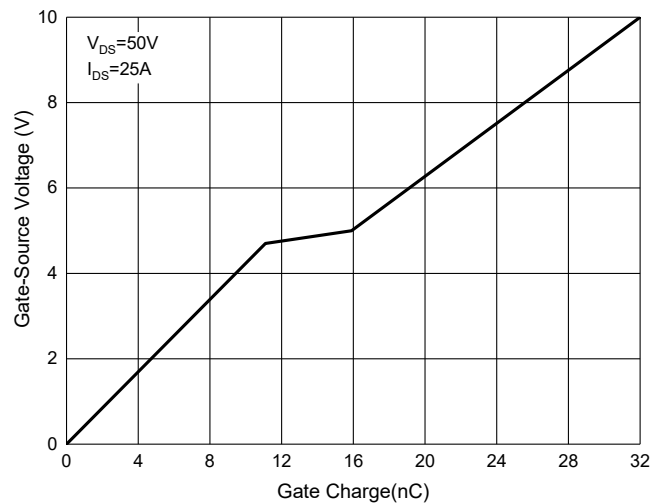


Fig. 6 - Gate Charge



**Curve Characteristics**

Fig. 7 - Safe Operation Area

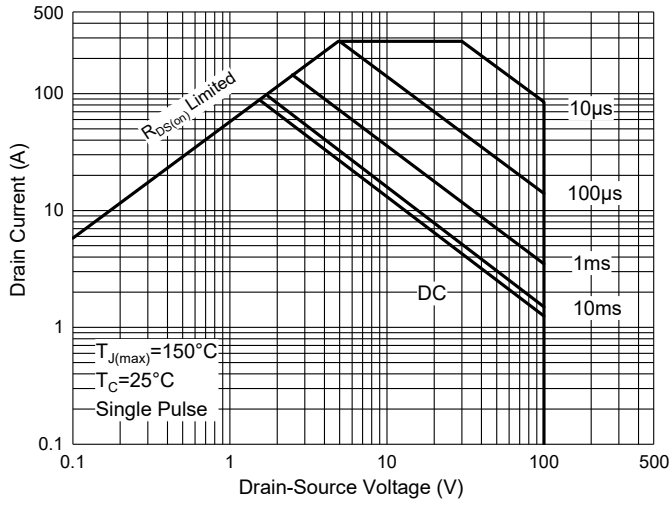
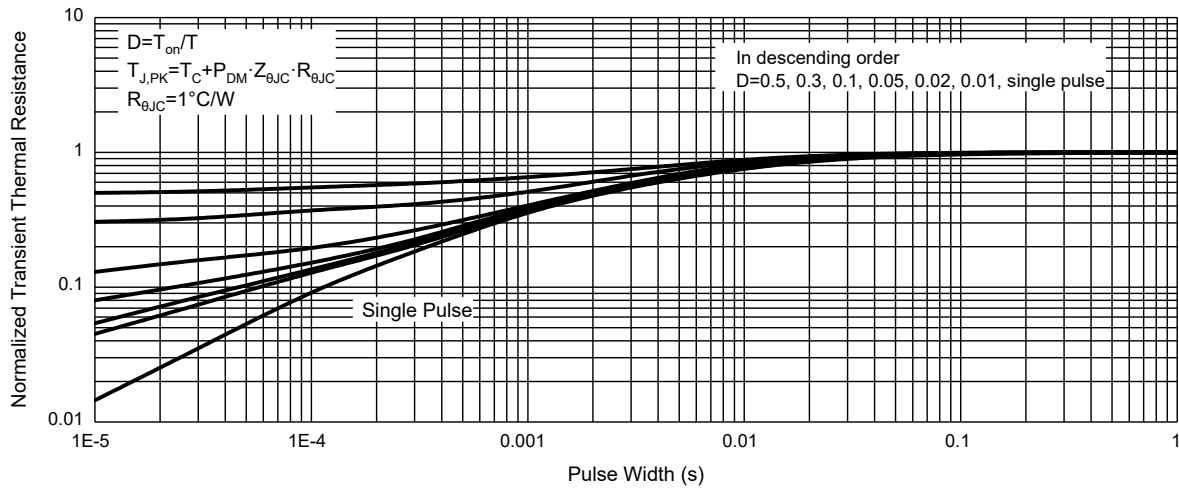


Fig. 8 - Normalized Transient Thermal Impedance



## 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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