

## Features

- Low  $R_{DS(on)}$  & FOM
- Extremely Low Switching Loss
- Excellent Stability and Uniformity
- Fast Switching and Soft Recovery
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)
- Halogen Free. "Green" Device
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1

## Maximum Ratings

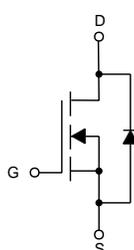
- Operating Junction Temperature Range:  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Storage Temperature Range:  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Thermal Resistance:  $60^{\circ}\text{C/W}$  Junction to Ambient<sup>(1)</sup>
- Thermal Resistance:  $0.5^{\circ}\text{C/W}$  Junction to Case

Parameter	Symbol	Value
Drain-Source Voltage	$V_{DS}$	100V
Gate-Source Voltage	$V_{GS}$	$\pm 20\text{V}$
Continuous Drain Current <sup>(2)</sup> , $T_C=25^{\circ}\text{C}$	$I_D$	130A
Pulsed Drain Current <sup>(3)</sup> , $T_C=25^{\circ}\text{C}$	$I_{D,pluse}$	440A
Power Dissipation <sup>(4)</sup> , $T_C=25^{\circ}\text{C}$	$P_D$	260W
Single Pulsed Avalanche Energy <sup>(5)</sup>	$E_{AS}$	900mJ

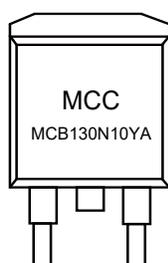
### Note:

1. The Value of  $R_{\theta JA}$  is Measured with the Device Mounted on 1 in<sup>2</sup> FR-4 Board with 2oz. Copper, In a Still Air Environment with  $T_A=25^{\circ}\text{C}$ .
2. Calculated Continuous Current Based on Maximum Allowable Junction Temperature.
3. Repetitive Rating: Pulse Width Limited By Max. Junction Temperature.
4.  $P_d$  is Based on Max. Junction Temperature, Using Junction-Case Thermal Resistance.
5.  $V_{DD}=50\text{V}$ ,  $R_G=25\Omega$ ,  $L=2\text{mH}$ , Starting  $T_J=25^{\circ}\text{C}$ .

## Internal Structure and Marking Code

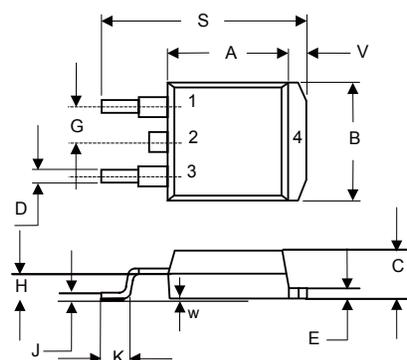


1. Gate
- 2,4. Drain
3. Source



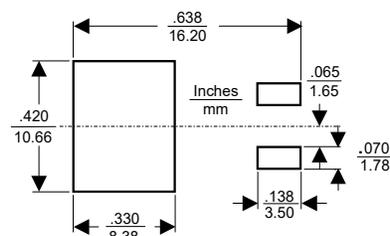
# N-Channel MOSFET

## 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



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-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	2.8	4	V
Gate-Body 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	$\mu A$
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		3.8	4.6	m $\Omega$
Gate Resistance	$R_G$	f=1MHz, Open Drain		0.9		$\Omega$
<b>Dynamic Characteristics</b>						
Drain-Source On-Voltage	$C_{ISS}$	$V_{GS}=0V, V_{DS}=50V, f=1MHz$		4600		pF
Output Capacitance	$C_{OSS}$			1250		pF
Reverse Transfer Capacitance	$C_{RSS}$			43		pF
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=50V, R_G=2.2\Omega, I_D=20A$		17.6		ns
Rise Time	$t_r$			30.2		ns
Turn-Off Delay Time	$t_{d(off)}$			33.5		ns
Fall Time	$t_f$			39.5		ns
<b>Gate Charge Characteristics</b>						
Total Gate Charge	$Q_g$	$V_{GS}=10V, V_{DS}=50V, I_D=20A$		66		nC
Gate-Source Charge	$Q_{gs}$			23		nC
Gate-Drain Charge	$Q_{gd}$			6.6		nC
<b>Body Diode Characteristics</b>						
Diode Forward Current	$I_S$	$V_{GS}<V_{th}$			130	A
Pulsed Source Current	$I_{SP}$				440	A
Diode Forward Voltage	$V_{SD}$	$I_S=20A, V_{GS}=0V$			1.3	V
Reverse Recovery Time	$t_{rr}$	$I_S=20A, di/dt=100A/\mu s$		63		ns
Reverse Recovery Charge	$Q_{rr}$				93	

## Curve Characteristics

Fig. 1 - Typical Output Characteristics

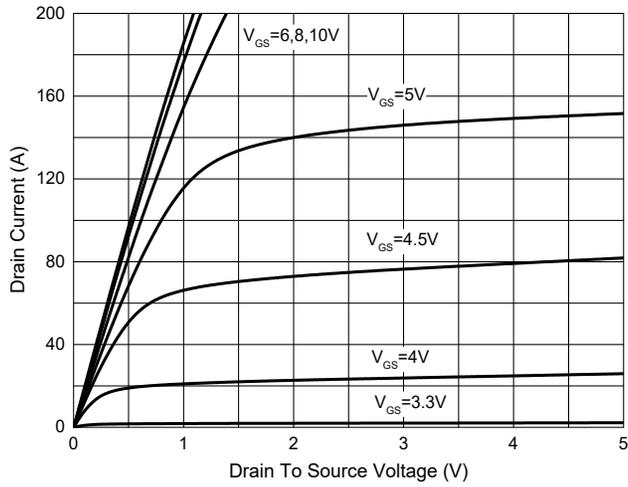


Fig. 2 - Transfer Characteristics

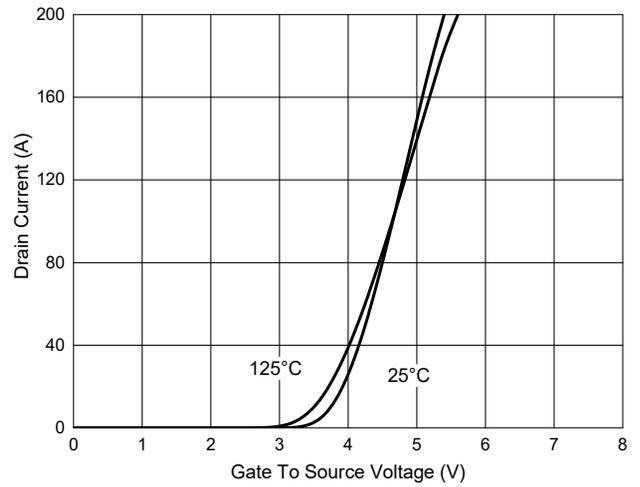


Fig. 3 -  $R_{DS(ON)} - V_{GS}$

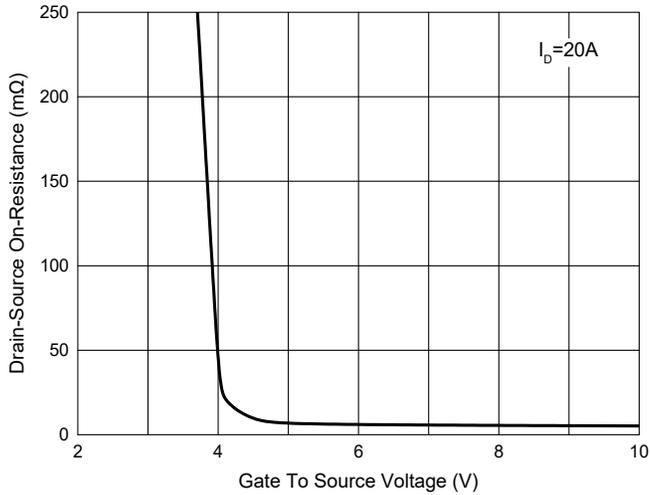


Fig. 4 - Total Gate Charge Characteristics

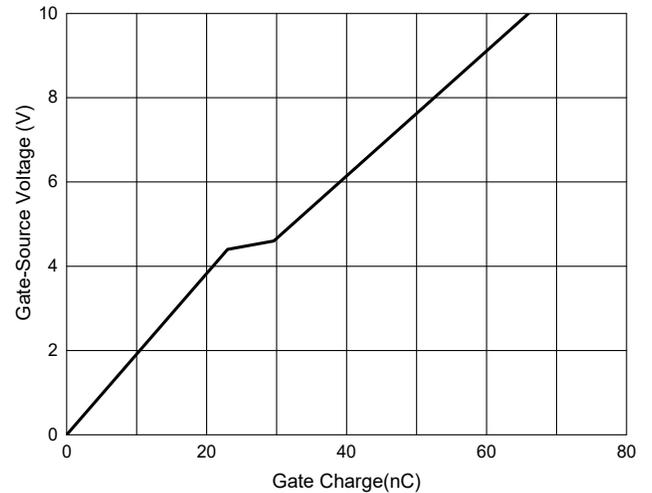


Fig. 5 - Capacitance Characteristics

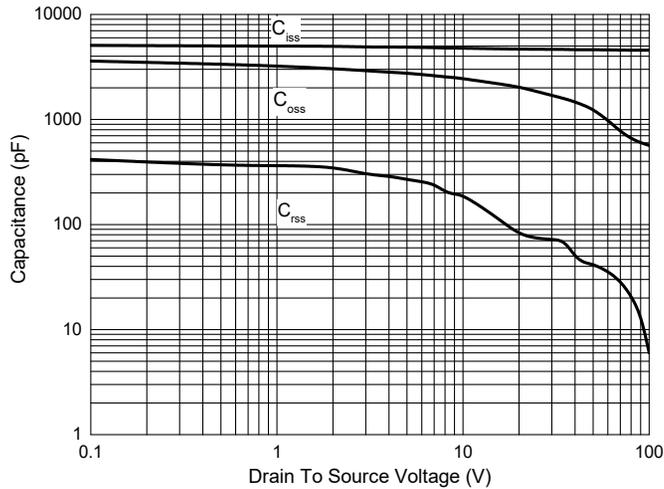
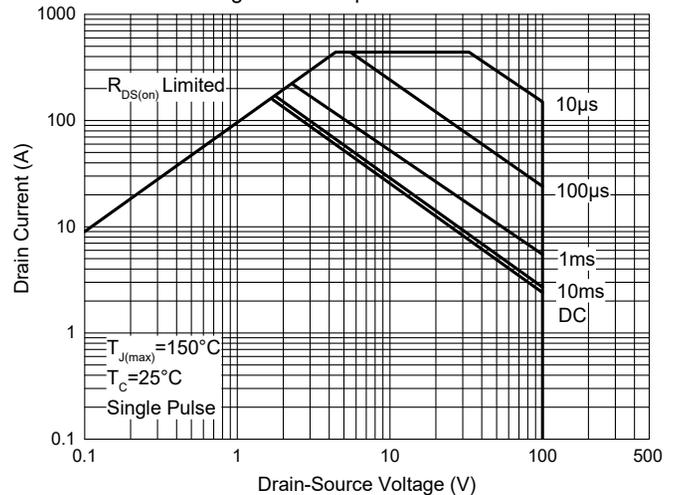


Fig. 6 - Safe Operation Area



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 800pcs/Reel
Part Number-BP	Tube: 5Kpcs/Ctn

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