

**Features**

- Advanced Super Junction Technology
- Low Power Loss by High Speed Switching
- Low On-Resistance
- 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)
- 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: 0.69°C/W Junction to Case

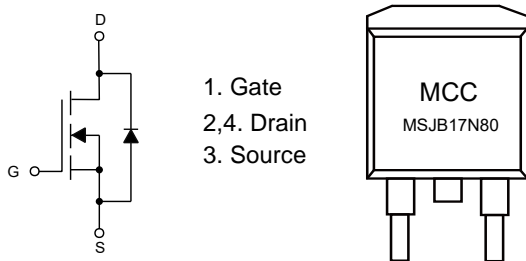
Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	800	V	
Gate-Source Voltage	$V_{GS}$	±30	V	
Continuous Drain Current	$I_D$	$T_C=25^\circ C$	17	A
		$T_C=100^\circ C$	10.8	A
Pulsed Drain Current <sup>(2)</sup>	$I_{DM}$	51	A	
Avalanche Energy	$E_{AS}$	670	mJ	
Total Power Dissipation	$P_D$	181	W	
MOSFET dv/dt Ruggedness	dv/dt	50	V/ns	
Diode dv/dt Ruggedness	dv/dt	15	V/ns	

**Note:**

1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

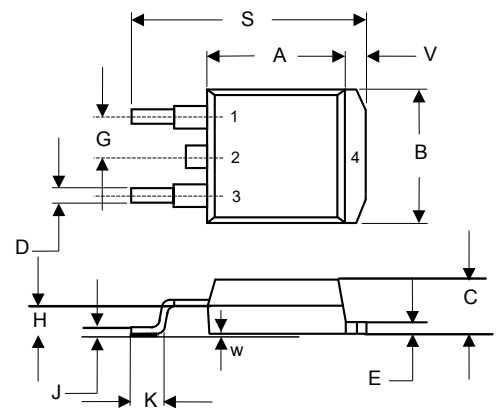
2. Pulse Width tp Limited by  $T_{J,max}$

**Internal Structure and Marking Code**



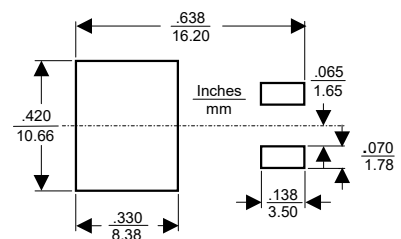
**N-CHANNEL  
Super-Junction  
Power MOSFET**

**D2-PAK**



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.320	0.359	8.13	9.14	
B	0.380	0.411	9.65	10.45	
C	0.160	0.190	4.06	4.83	
D	0.020	0.035	0.51	0.89	
E	0.045	0.055	1.14	1.40	
G	0.083	0.105	2.10	2.67	
H	0.096	0.134	2.43	3.40	
J	0.014	0.021	0.35	0.53	
K	0.090	0.131	2.29	3.32	
S	0.575	0.625	14.22	16.22	
V	0.045	0.055	1.14	1.40	
W	0.000	0.006	0.00	0.15	

**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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	800			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 30V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=800V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=11A$		250	290	m $\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				17	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=17A$			1.4	V
Reverse Recovery Time	$t_{rr}$	$I_S=17A, di/dt=100A/\mu s, V_{DD}=100V$		565		ns
Reverse Recovery Charge	$Q_{rr}$			9.6		nC
Reverse Recovery Current	$I_{rrm}$			34.1		A
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		1830		pF
Output Capacitance	$C_{oss}$			1510		
Reverse Transfer Capacitance	$C_{rss}$			53.2		
Effective Output Capacitance Energy Related <sup>(3)</sup>	$C_{o(er)}$	$V_{DS}=0V$ to 640V, $V_{GS}=0V, f=1.0MHz$		40		pF
Gate Resistance	$R_g$	$V_{DS}=0V, V_{GS}=0V, f=1MHz$		2.05		$\Omega$
Total Gate Charge	$Q_g$	$V_{DS}=640V, V_{GS}=10V, I_D=17A$		56		nC
Gate-Source Charge	$Q_{gs}$			10.4		
Gate-Drain Charge	$Q_{gd}$			22		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, R_G=25\Omega,$ $V_{DS}=400V, I_D=17A$		32		ns
Turn-On Rise Time	$t_r$			56.5		
Turn-Off Delay Time	$t_{d(off)}$			160		
Turn-Off Fall Time	$t_f$			49		

Note:3.  $C_{o(er)}$  is a capacitance that gives the same stored energy as  $C_{OSS}$  while  $V_{DS}$  is rising from 0V to 80%  $V_{(BR)DSS}$ .

## Curve Characteristics

Fig. 1 - Typical Output Characteristics

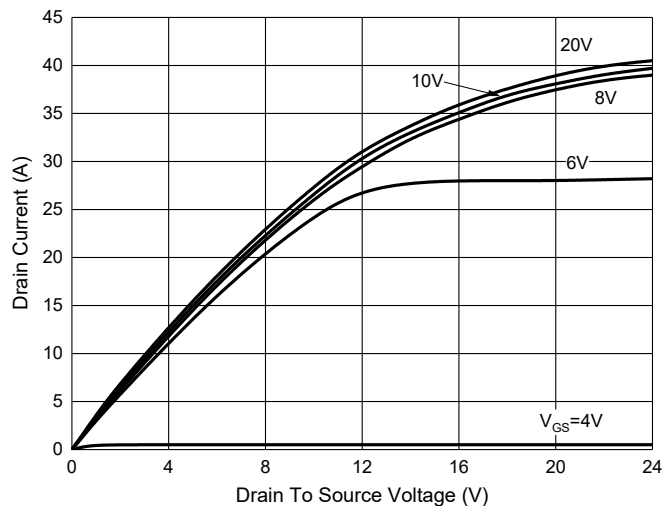


Fig. 2 - Transfer Characteristics

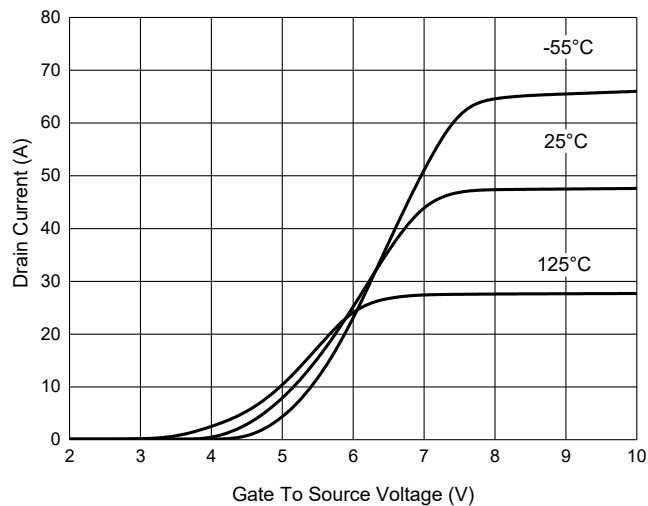


Fig. 3 -  $R_{DS(ON)} - I_D$

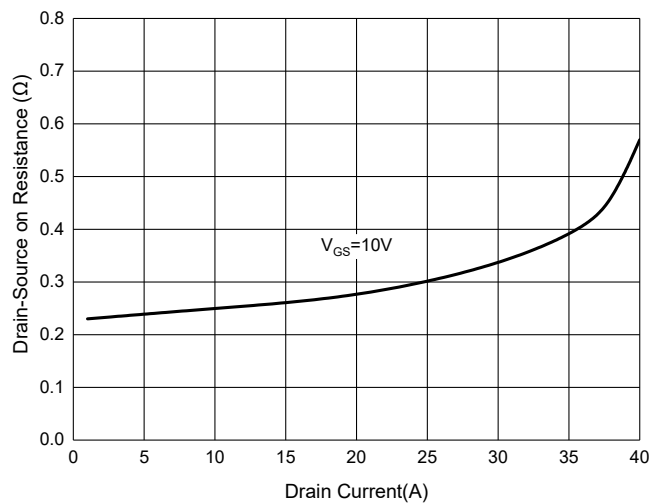


Fig. 4 - Normalized On Resistance Characteristics

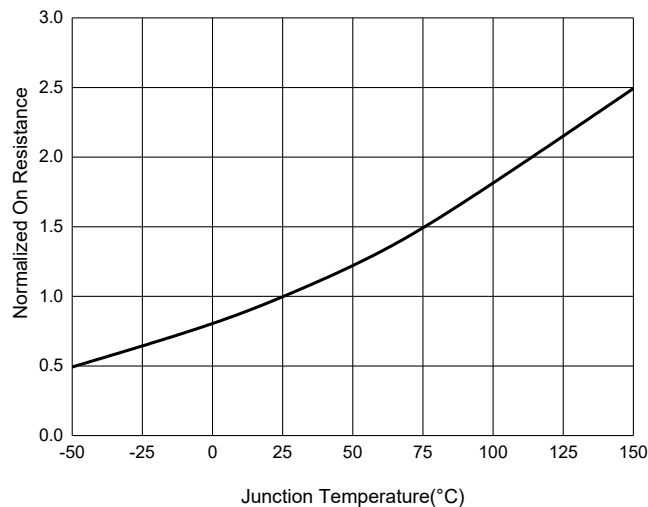


Fig. 5 - Normalized Drain-Source Breakdown Voltage

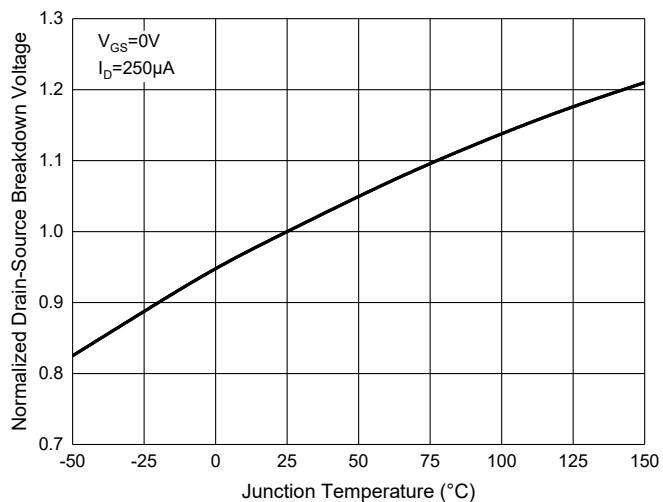
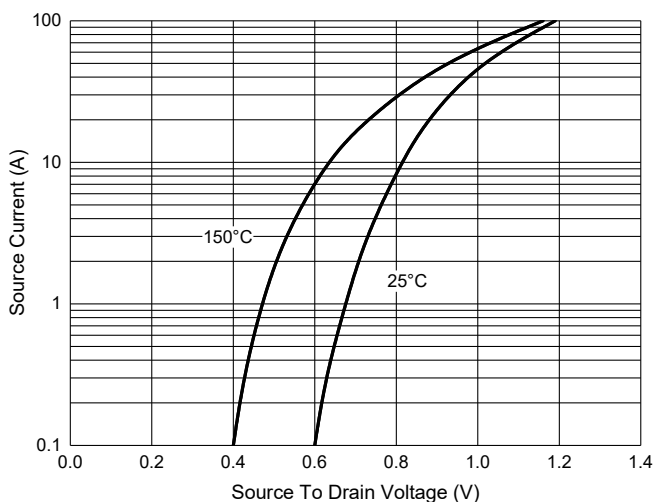


Fig. 6 -  $I_S - V_{SD}$



## Curve Characteristics

Fig. 7 - Capacitance Characteristics

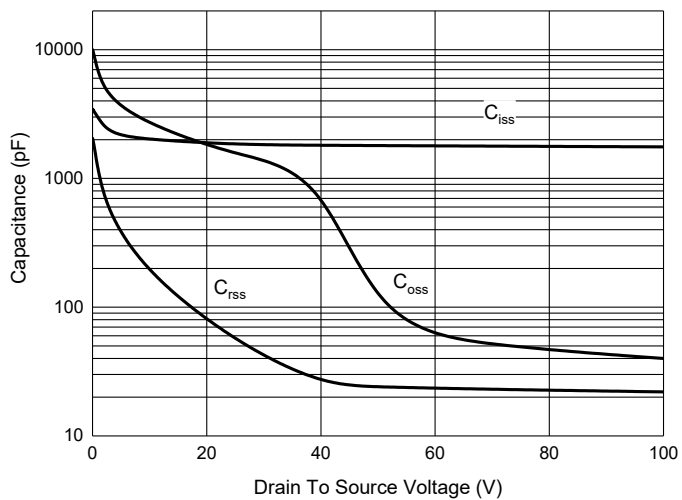


Fig. 8 - Gate Charge

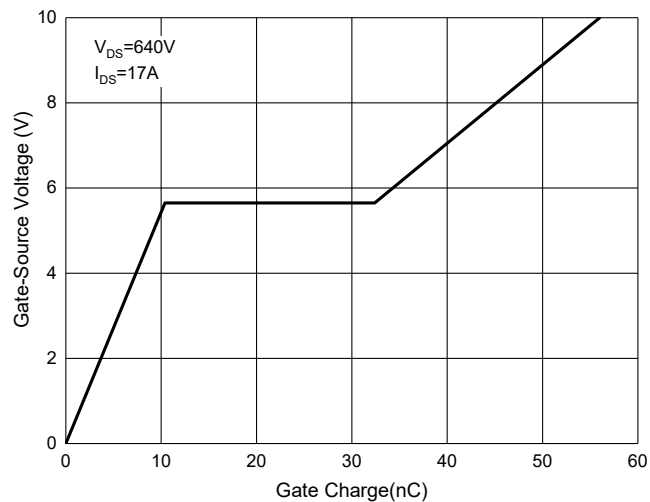
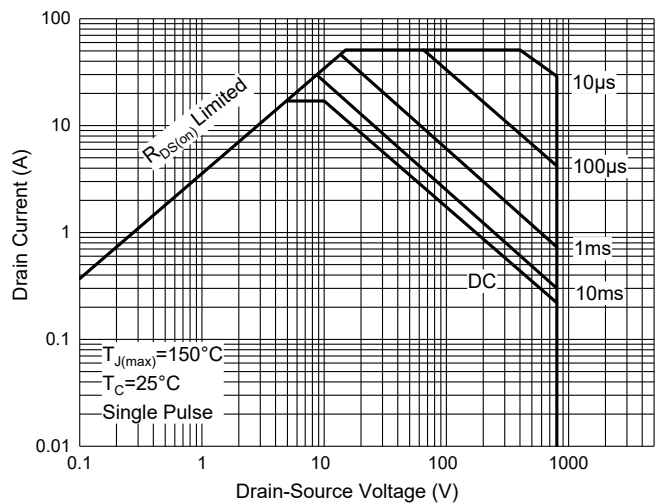


Fig. 9 - Safe Operation Area



## Ordering Information

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

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