

**Features**

- Split Gate Trench MOSFET Technology
- Low Thermal Resistance
- Halogen Free
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

**Maximum Ratings**

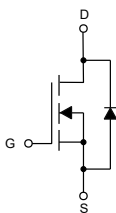
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 40°C/W Junction to Ambient
- Thermal Resistance: 0.4°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	200	A
Pulsed Drain Current <sup>(1)</sup>	$I_{DM}$	600	A
Total Power Dissipation	$P_D$	312	W
Single Pulsed Avalanche Energy <sup>(2)</sup>	$E_{AS}$	500	mJ

Note:

1. Pulse Test: Pulse Width ≤ 10µs, Duty Cycle ≤ 1%.
2.  $T_J=25^\circ\text{C}$ ,  $L=0.1\text{mH}$ ,  $V_{DD}=50\text{V}$ .

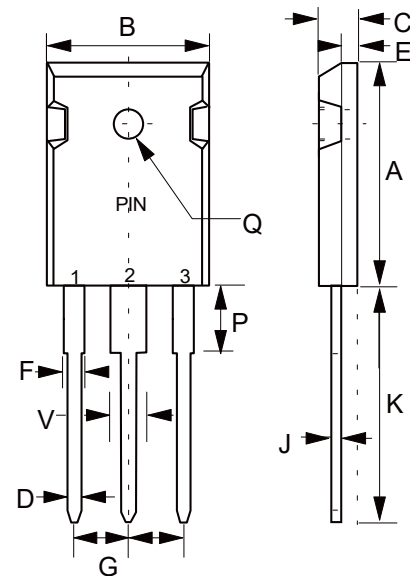
**Internal Structure**



1. Gate
2. Drain
3. Source

**N-CHANNEL  
MOSFET**

**TO-247**



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.787	0.866	20.00	22.00	
B	0.598	0.638	15.20	16.20	
C	0.185	0.208	4.70	5.30	
D	0.035	0.059	0.90	1.50	
E	0.059	0.094	1.50	2.40	
F	0.067	0.091	1.70	2.30	
J	0.019	0.031	0.48	0.80	
K	0.748	0.833	19.00	21.15	
P	0.122	0.189	3.10	4.80	
Q	0.118	0.150	3.00	3.80	Φ
V	0.106	0.134	2.70	3.40	
G	0.197	0.224	5.00	5.70	

**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	$I_{DSS}$	$V_{DS}=80V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2		4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		1.75	2.1	m $\Omega$
		$V_{GS}=6V, I_D=10A$		2.05	2.6	m $\Omega$
<b>Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				200	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=20A$			1.3	V
Reverse Recovery Time	$t_{rr}$	$I_S=20A, di/dt=100A/\mu s$		120		ns
Reverse Recovery Charge	$Q_{rr}$			404		nC
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=50V, V_{GS}=0V, f=1MHz$		13310		pF
Output Capacitance	$C_{oss}$			2047		
Reverse Transfer Capacitance	$C_{riss}$			53		
Total Gate Charge	$Q_g$	$V_{DS}=50V, V_{GS}=10V, I_D=20A$		237		nC
Gate-Source Charge	$Q_{gs}$			58		
Gate-Drain Charge	$Q_{gd}$			61		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=50V, V_{GEN}=10V,$ $R_G=4.5\Omega, R_L=2.5\Omega,$ $I_{DS}=20A$		34		ns
Turn-On Rise Time	$t_r$			81		
Turn-Off Delay Time	$t_{d(off)}$			175		
Turn-Off Fall Time	$t_f$			129		

**Curve Characteristics**

Fig. 1 - Typical Output Characteristics

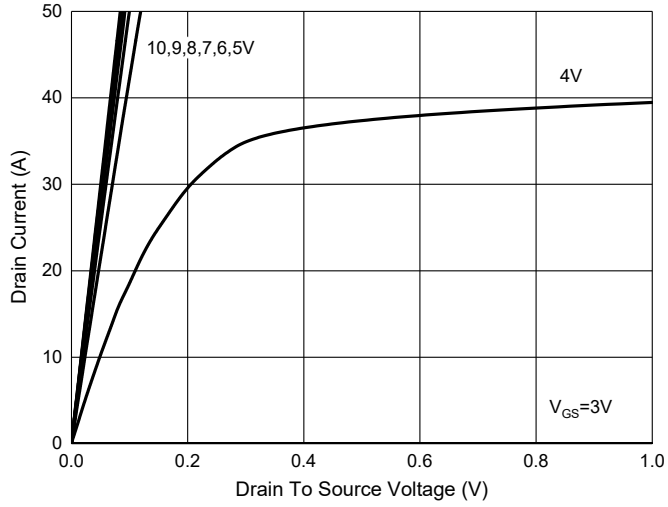


Fig. 2 - I<sub>S</sub>—V<sub>SD</sub>

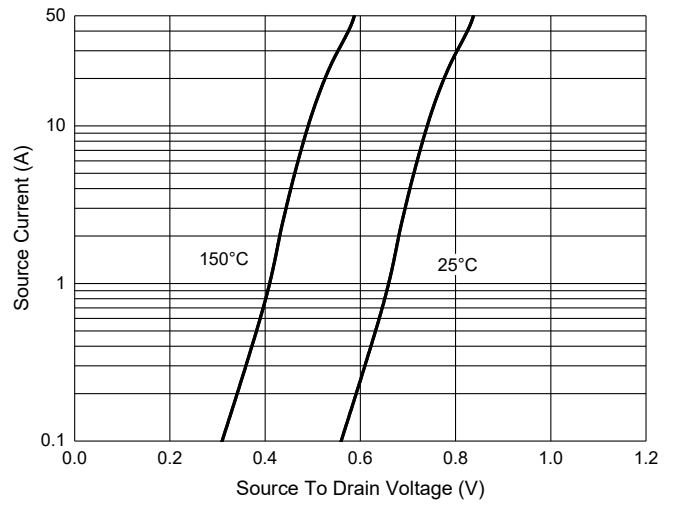


Fig. 3 - R<sub>DS(ON)</sub>—I<sub>D</sub>

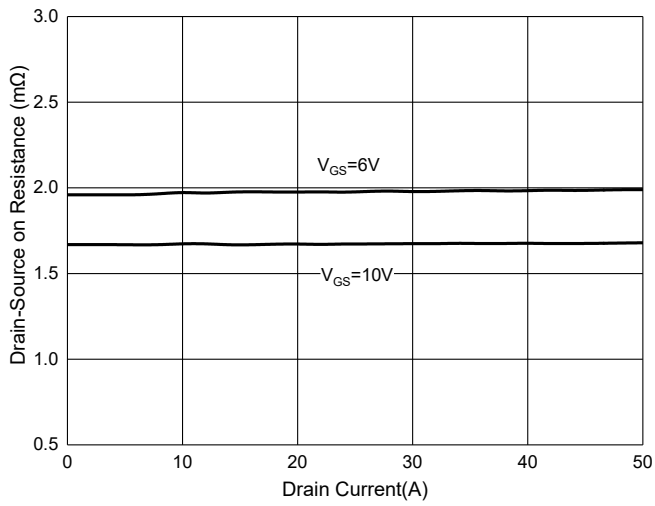


Fig. 4 - Normalized On Resistance Characteristics

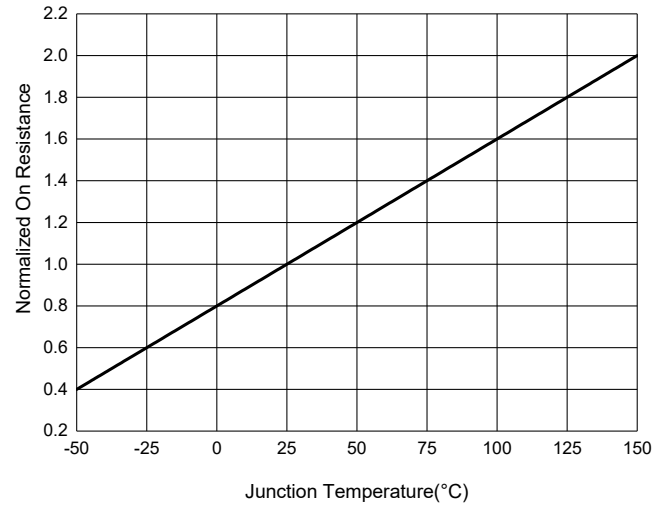


Fig. 5 - Capacitance Characteristics

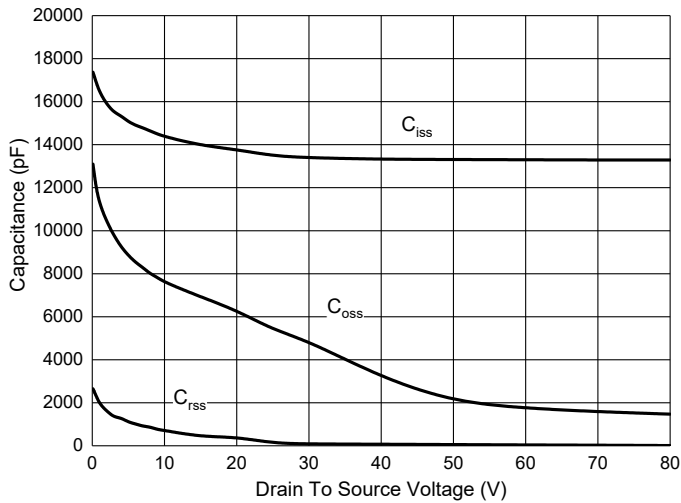
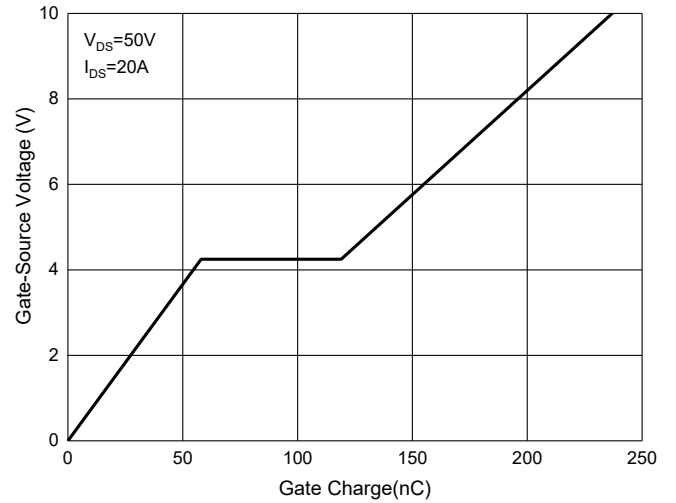
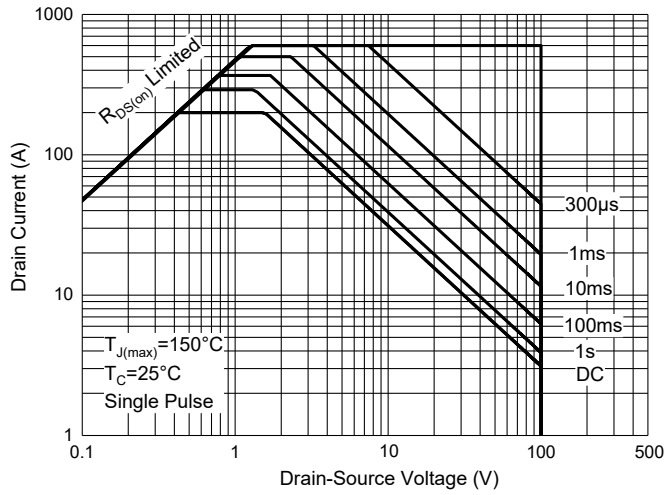


Fig. 6 - Gate Charge



## Curve Characteristics

Fig. 7 - Safe Operation Area



## Ordering Information

Device	Packing
MCW200N10Y-BP	Tube:30pcs/Tube, 360pcs/Box,1.8K/Ctn;

Note : Adding "-HF" Suffix For Halogen Free, eg. MCW200N10Y-BP-HF

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