

Features

- High Density Cell Design for Low $R_{DS(ON)}$
- Trench Power LV MOSFET Technology
- Excellent Package for Heat Dissipation
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"

Maximum Ratings

- Operating Junction Temperature Range : -55°C to $+175^{\circ}\text{C}$
- Storage Temperature Range: -55°C to $+175^{\circ}\text{C}$
- Maximum Thermal Resistance: 2.14°C/W Junction to Case^(Note1)

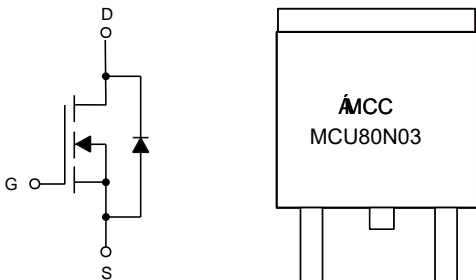
Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	$T_C=25^{\circ}\text{C}$	80
		$T_C=100^{\circ}\text{C}$	56
Pulsed Drain Current ^(Note2)	I_{DM}	150	A
Total Power Dissipation	P_D	$T_C=25^{\circ}\text{C}$	70
		$T_C=100^{\circ}\text{C}$	35
Single Pulse Avalanche Energy ^(Note3)	E_{AS}	225	mJ

Note 1. The Maximum Rating Presented Here is Based on Mounting on a 1in^2 Pad of 2oz Copper.

2. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

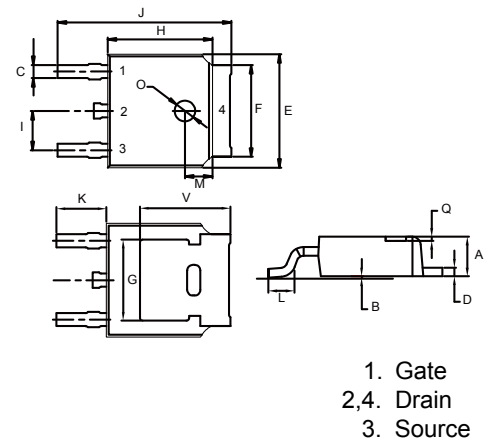
3. $T_J=25^{\circ}\text{C}$, $V_{DD}=20\text{V}$, $V_G=10\text{V}$, $L=0.5\text{mH}$, $R_g=25\Omega$

Internal Structure and Marking Code



N-CHANNEL MOSFET

DPAK(TO-252)



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.087	0.094	2.20	2.40	
B	0.000	0.005	0.00	0.13	
C	0.026	0.034	0.66	0.86	
D	0.018	0.023	0.46	0.58	
E	0.256	0.264	6.50	6.70	
F	0.201	0.215	5.10	5.46	
G	0.190		4.83		TYP.
H	0.236	0.244	6.00	6.20	
I	0.086	0.094	2.18	2.39	
J	0.386	0.409	9.80	10.40	
K	0.114		2.90		TYP.
L	0.055	0.067	1.40	1.70	
M	0.063		1.60		TYP.
O	0.043	0.051	1.10	1.30	
Q	0.000	0.012	0.00	0.30	
V	0.211		5.35		TYP.

Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.8	1.5	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=18A$	2.8	3.6	4	m Ω
		$V_{GS}=4.5V, I_D=10A$		4.7	6	
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=20A$		0.85	1.2	V
Maximum Body-Diode Continuous Current	I_S				80	A
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V, f=1MHz$		1600		pF
Output Capacitance	C_{oss}			224		
Reverse Transfer Capacitance	C_{rss}			152		
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS}=15V, V_{GS}=10V, I_D=20A$		28		nC
Gate-Source Charge	Q_{gs}			6		
Gate-Drain Charge	Q_{gd}			7		
Reverse Recovery Charge	Q_{rr}	$I_F=20A, di/dt=100A/\mu s$		21		ns
Reverse Recovery Time	t_{rr}			40		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=20V, I_D=2A, R_L=1\Omega, R_{GEN}=3\Omega$		6		ns
Turn-On Rise Time	t_r			36		
Turn-Off Delay Time	$t_{d(off)}$			29		
Turn-Off Fall Time	t_f			7		

Curve Characteristics

Fig. 1 - Output Characteristics

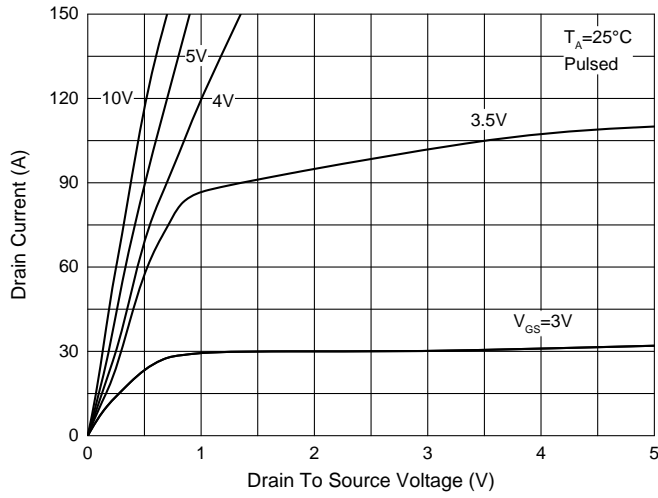


Fig. 2 - Transfer Characteristics

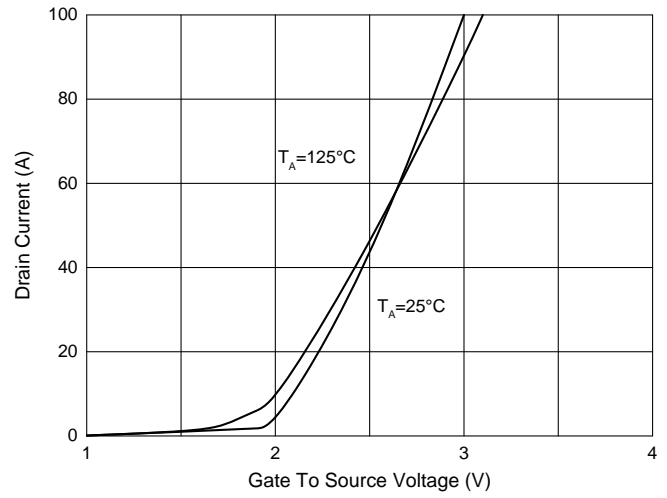


Fig. 3 - Capacitance Characteristics

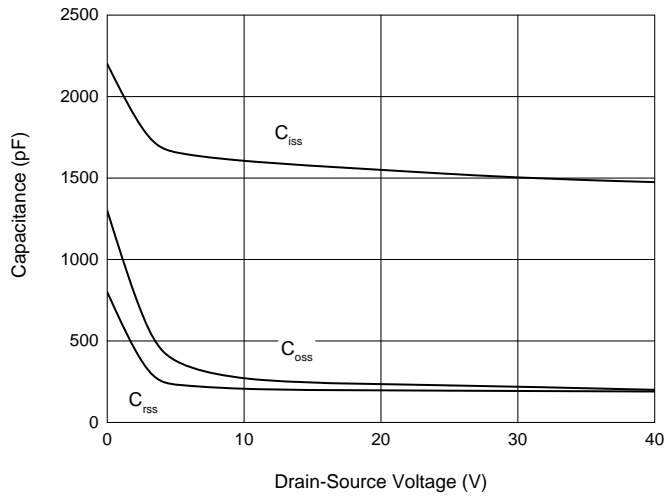


Fig. 4 - Gate Charge

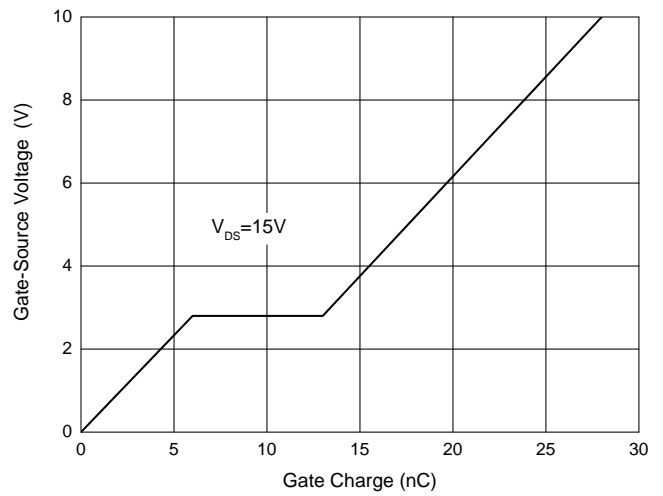


Fig. 5 - $R_{DS(ON)} - I_D$

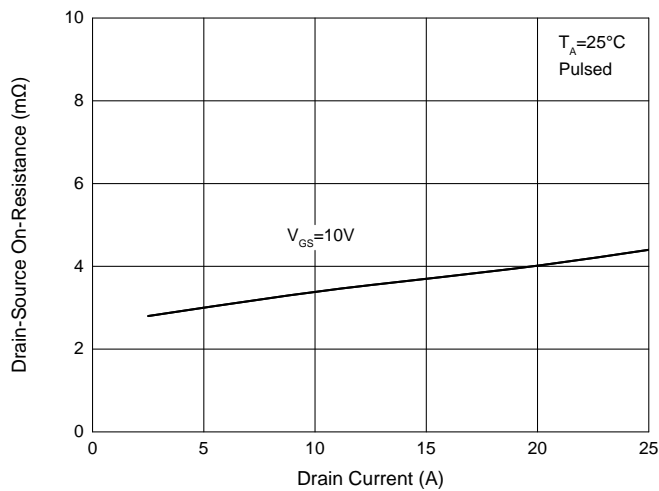
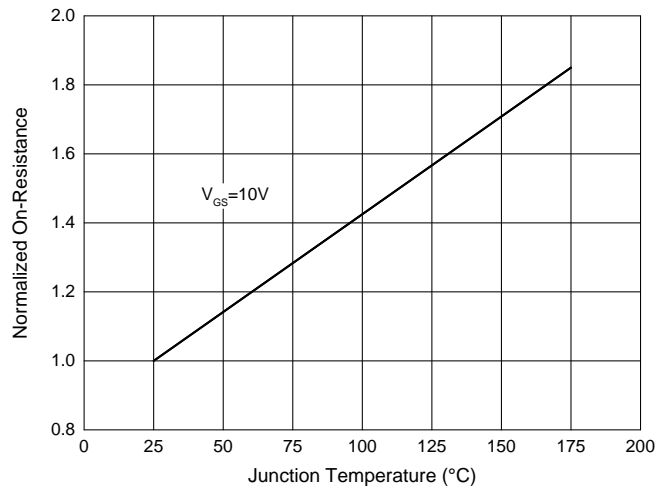
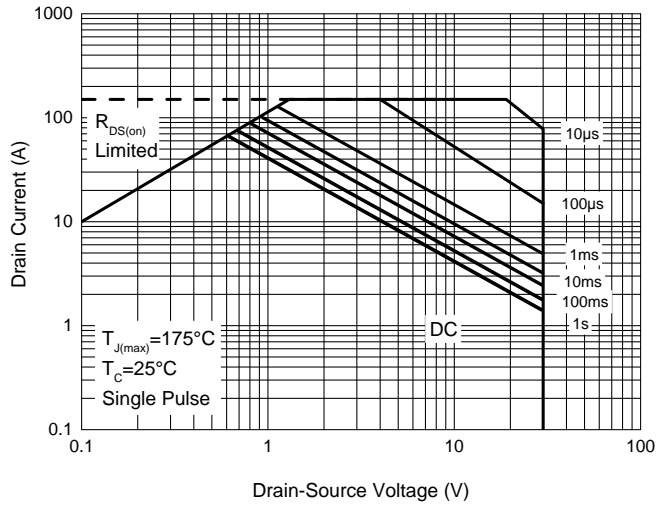


Fig. 6 - Drain-Source On-Resistance Characteristics



Curve Characteristics

Fig. 7 - Safe Operation Area



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 2.5Kpcs/Reel

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

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