

Features

- High Current Load Applications
- Load Switching
- Hard Switched and High Frequency Circuits
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

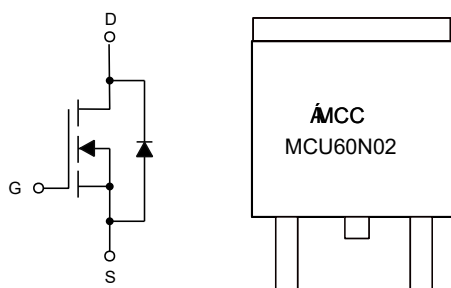
- Operating Junction Temperature Range : -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Thermal Resistance: 4.3°C/W Junction to Case^(Note3)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±10	V
Drain Current ($T_C=25^\circ\text{C}$)	I_D	60	A
Drain Current ($T_C=100^\circ\text{C}$)	I_D	42	A
Pulsed Drain Current ^(Note 1)	I_{DM}	210	A
Total Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	35	W
Total Power Dissipation ($T_C=100^\circ\text{C}$)	P_D	18	W
Single Pulsed Avalanche Energy ^(Note2)	E_{AS}	195	mJ

Note:

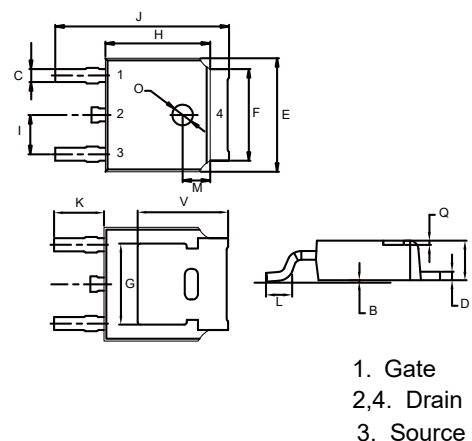
1. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.
2. $T_J=25^\circ\text{C}$, $V_{DD}=15\text{V}$, $V_G=10\text{V}$, $L=0.5\text{mH}$, $R_G=25\Omega$
3. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design, while $R_{\theta JA}$ is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.

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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 10V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4	0.62	1	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=20A$		4.5	6.0	m Ω
		$V_{GS}=2.5V, I_D=15A$		5.5	8.8	m Ω
		$V_{GS}=1.8V, I_D=10A$		8.0	14	m Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0V, f=1MHz$		2450		pF
Output Capacitance	C_{oss}			430		
Reverse Transfer Capacitance	C_{rss}			205		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=4.5V, V_{DD}=10V, I_D=10A, R_L=1\Omega, R_{GEN}=3\Omega$		12		ns
Turn-On Rise Time	t_r			26		
Turn-Off Delay Time	$t_{d(off)}$			35		
Turn-Off Fall Time	t_f			10		
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=4.5V, I_D=15A$		65		nC
Gate-Source Charge	Q_{gs}			15		
Gate-Drain Charge	Q_{gd}			13		
Body Diode Characteristics						
Diode Forward Current	I_S				60	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=20A$			1.2	V
Reverse Recovery Time	t_{rr}	$I_F=15A, di/dt=100A/\mu s$		35		ns
Reverse Recovery Charge	Q_{rr}				39	

Curve Characteristics

Fig. 1 - Output Characteristics

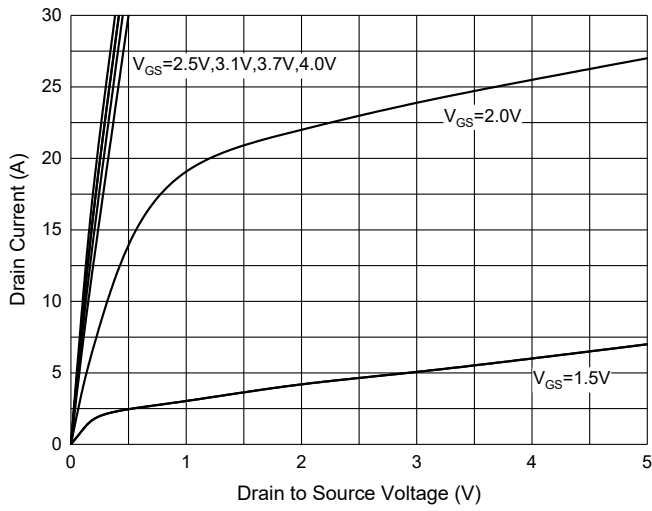


Fig. 2 - Transfer Characteristics

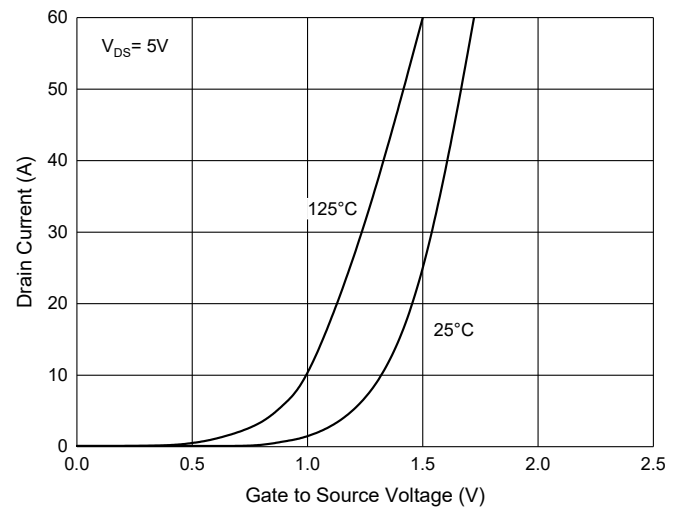


Fig. 3 - Capacitance Characteristics

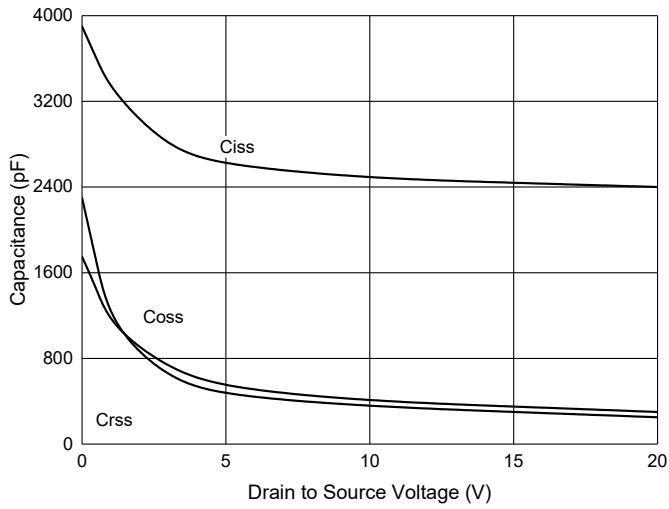


Fig. 4 - Gate Charge

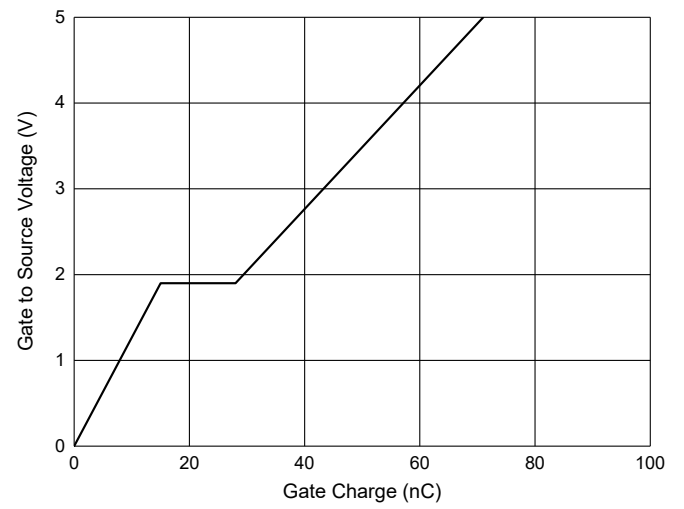


Fig. 5 - $R_{DS(ON)} - I_D$

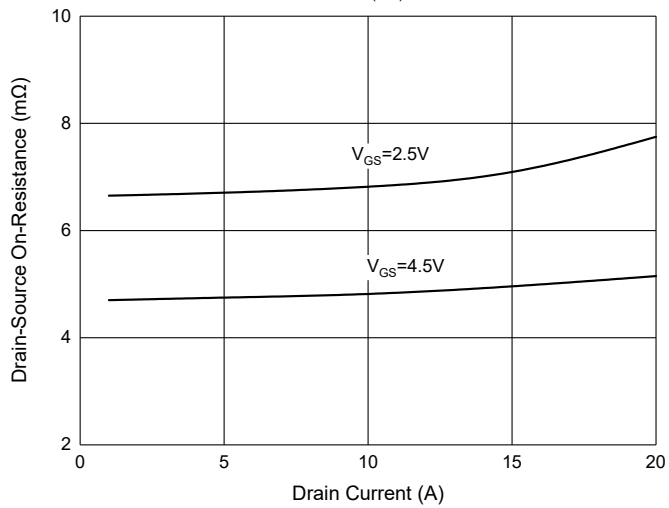
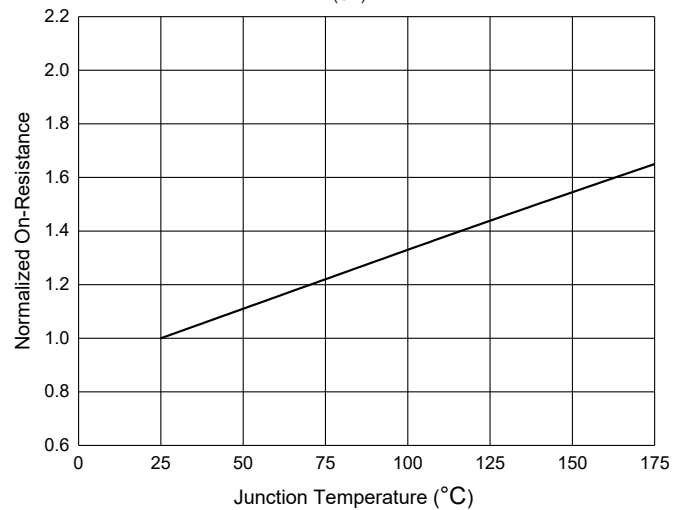


Fig. 6 - $R_{DS(ON)} - \text{Temperature}$



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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