

**Features**

- AEC-Q101 Qualified
- Halogen Free. "Green" Device (Note 1)
- Advanced trench cell design
- Low Reverse Transfer Capacitance
- Excellent Package for Good Heat Dissipation
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

**Maximum Ratings**

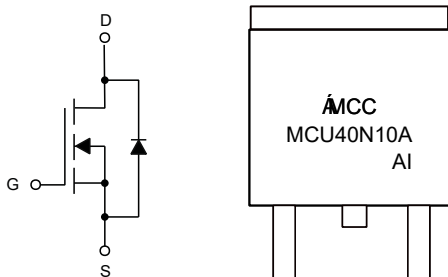
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 100°C/W Junction to Ambient
- Thermal Resistance: 2.5°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	40	A
Pulsed Drain Current	$I_{DM}$	120	A
Single Pulse Avalanche Energy (Note2)	$E_{AS}$	30	mJ
Total Power Dissipation $T_a=25^\circ C$	$P_D$	1.25	W
Total Power Dissipation $T_c=25^\circ C$	$P_D$	50	

**Notes**

1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2.  $V_{DD}=50V$ ,  $R_G=25\Omega$ ,  $L=0.3mH$ ,  $T_J=25^\circ C$

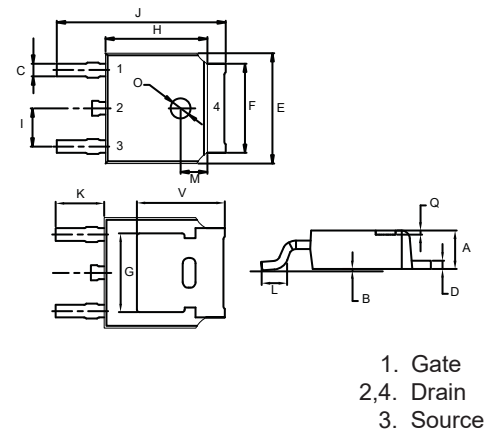
**Ordering Information**



AI: 2 codes in total  
A is the year  
I is the month

**N-CHANNEL MOSFET**

**DPAK(TO-252)**



DIM	INCHES		MM		NOTE
	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
<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	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage <sup>(Note 3)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2		4	V
Drain-Source On-Resistance <sup>(Note 3)</sup>	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		13	16.9	m $\Omega$
		$V_{GS}=6V, I_D=10A$		18.5	24	m $\Omega$
<b>Dynamic Characteristics<sup>(Note 4)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=50V, V_{GS}=0V, f=1MHz$		1218		pF
Output Capacitance	$C_{oss}$			178		
Reverse Transfer Capacitance	$C_{rss}$			27		
Total Gate Charge	$Q_g$	$V_{DD}=50V, V_{GS}=10V, I_D=20A$		25		nC
Gate-Source Charge	$Q_{gs}$			7.6		
Gate-Drain Charge	$Q_{gd}$			7.7		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=50V, V_{GEN}=10V, R_G=4.5\Omega, I_{DS}=20A, R_L=2.5\Omega$		11		ns
Turn-On Rise Time	$t_r$			36		
Turn-Off Delay Time	$t_{d(off)}$			20		
Turn-Off Fall Time	$t_f$			36		
<b>Drain-Source Body Diode Characteristics</b>						
Reverse Recovery Time	$t_{rr}$	$I_{DS}=20A, V_{GS}=0V$ $di_{SD}/dt=100A/\mu s$		54		nS
Reverse Recovery Charge	$Q_{rr}$			71		nC
Body Diode Voltage	$V_{SD}$	$I_S=20A, V_{GS}=0V$			1.3	V

Note 3. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 1\%$ .

4. Guaranteed by Design, Not Subject to Production Testing.

**Curve Characteristics**

Fig. 1 - Output Characteristics

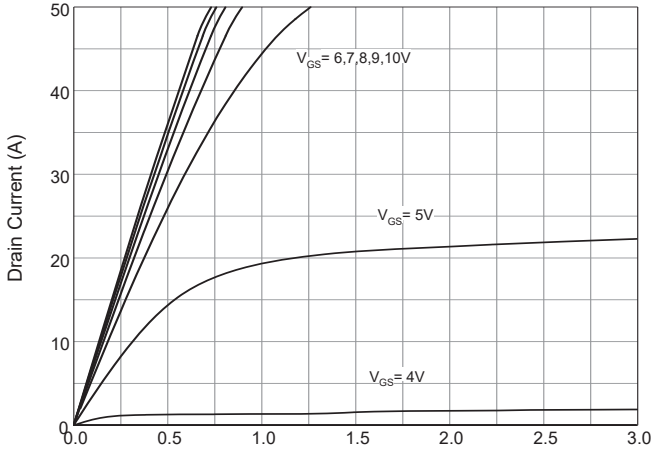


Fig. 2 -  $R_{DS(ON)} - I_D$

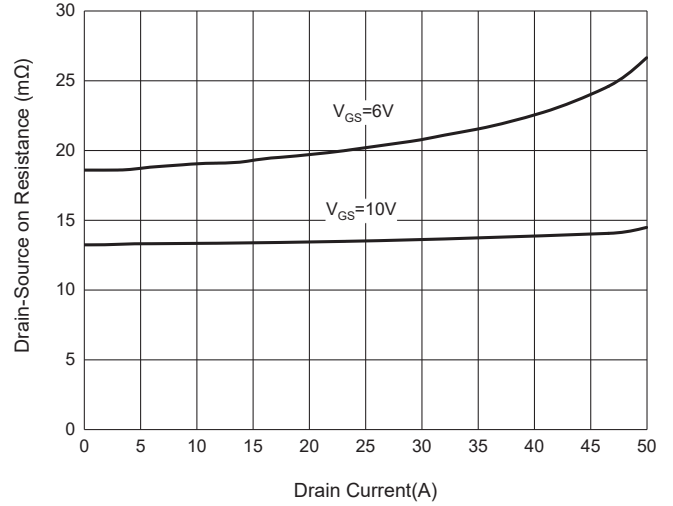


Fig. 3 -  $R_{DS(ON)} - V_{GS}$

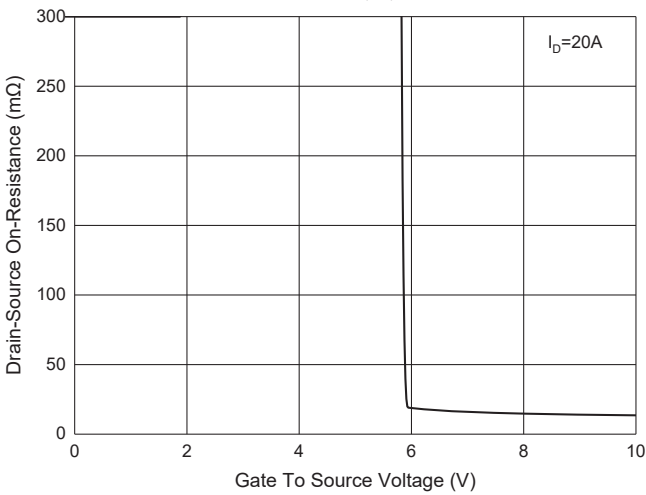


Fig. 4 - Normalized Threshold Voltage

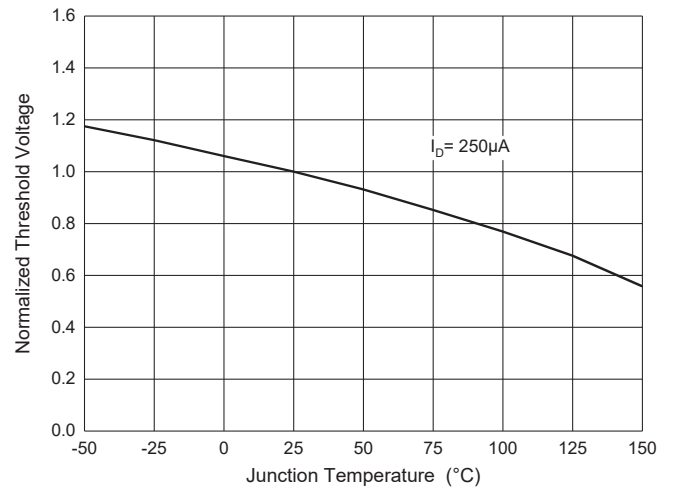


Fig. 5 -  $I_S - V_{SD}$

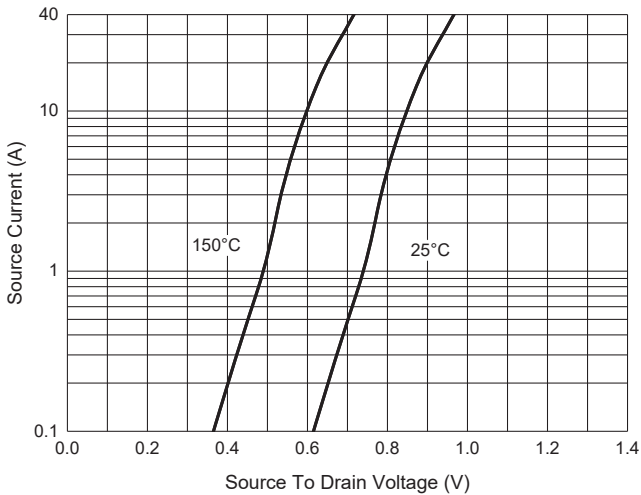
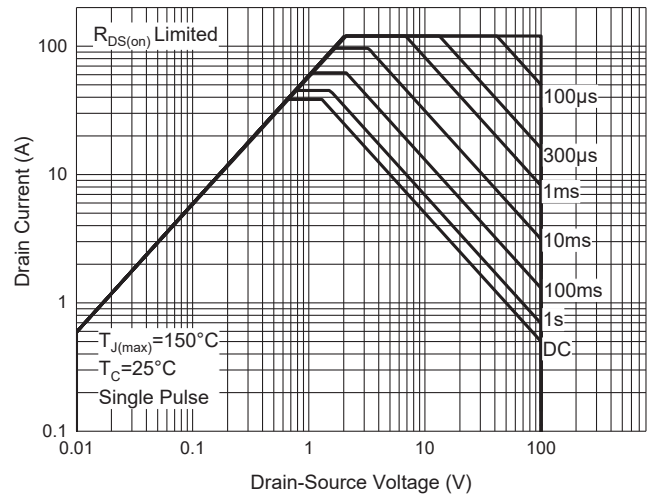


Fig. 6 - Safe Operation Area



## Ordering Information

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

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