

## Features

- Split Gate Trench MOSFET Technology
- AEC-Q101 Qualified
- Extremely Low Switching Loss
- Fast Switching and Soft Recovery
- Moisture Sensitivity Level 1
- 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)

## Maximum Ratings

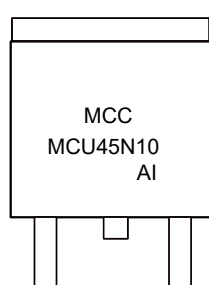
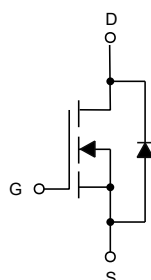
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 1.7°C/W Junction to Case (Steady-State)
- Thermal Resistance: 20°C/W Junction to Ambient ( $t \leq 10s$ ) (Note 2)
- Thermal Resistance: 50°C/W Junction to Ambient (Steady-State) (Note 2)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	45	A
Pulsed Drain Current (Note 3)	$I_{DM}$	180	A
Total Power Dissipation (Note 4)	$P_D$	72	W
Single Pulsed Avalanche Energy (Note 5)	$E_{AS}$	81	mJ

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. The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A = 25^\circ\text{C}$ . The Power dissipation  $P_{DSM}$  is based on  $R_{\theta JA}$   $t \leq 10s$  and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.
3. Repetitive rating; pulse width limited by max. junction temperature.
4.  $P_D$  is based on max. junction temperature, using junction-case thermal resistance.
5.  $V_{DD} = 50V$ ,  $R_G = 25\Omega$ ,  $L = 0.5mH$ ,  $I_{AS} = 18A$ .

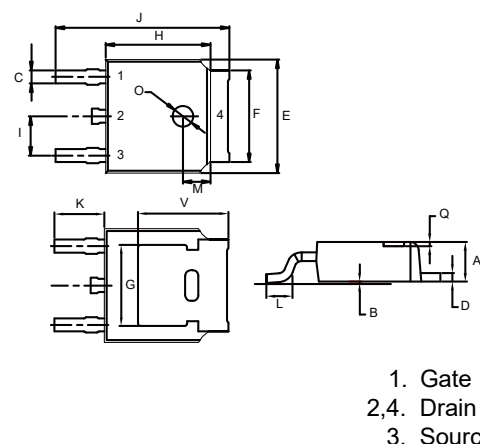
•bHfbU'Gfi Wi fY'UbX'AUF\_b[ '7 cXY



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
Static Characteristics						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	100			V
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V			1	μA
Gate-Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1	1.8	2.5	V
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A		14	17	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =20A		17	21.5	mΩ
Gate Resistance	R <sub>g</sub>	f=1MHz, Open drain		1		Ω
Diode Characteristics						
Continuous Body Diode Current	I <sub>S</sub>				40	A
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =20A			1.3	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>S</sub> =20A, dI <sub>F</sub> /dt=100A/μs		39.8		ns
Reverse Recovery Charge	Q <sub>rr</sub>			42		nC
Dynamic Characteristics						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =50V,V <sub>GS</sub> =0V,f=1MHz		1135		pF
Output Capacitance	C <sub>oss</sub>			399		
Reverse Transfer Capacitance	C <sub>rss</sub>			18		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =50V,V <sub>GS</sub> =10V,I <sub>D</sub> =25A		16		nC
Gate-Source Charge	Q <sub>gs</sub>			5.6		
Gate-Drain Charge	Q <sub>gd</sub>			2.4		
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =50V,I <sub>D</sub> =25A R <sub>GEN</sub> =2.2Ω		39.2		ns
Turn-On Rise Time	t <sub>r</sub>			11		
Turn-Off Delay Time	t <sub>d(off)</sub>			53.2		
Turn-Off Fall Time	t <sub>f</sub>			15.8		

## Curve Characteristics

Fig. 1 - Typical Output Characteristics

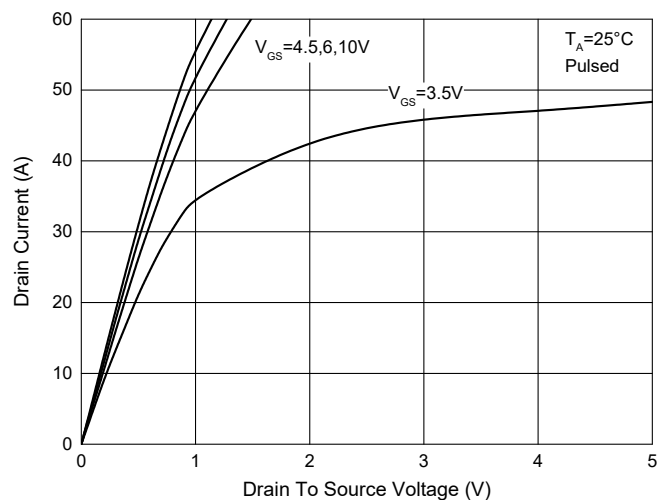


Fig. 2 - Transfer Characteristics

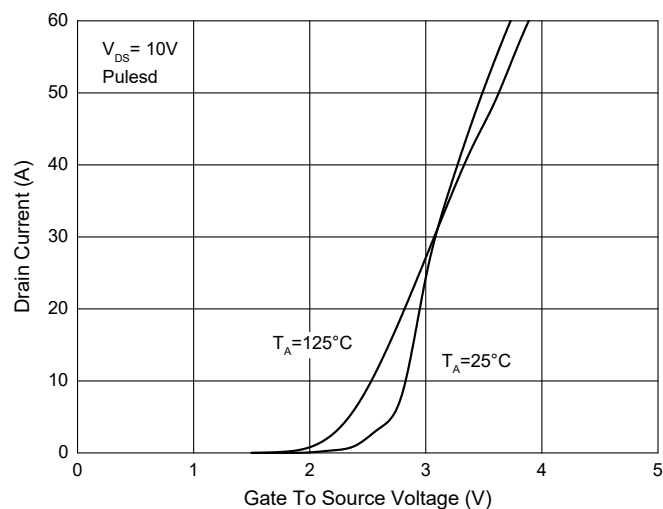


Fig. 3 -  $R_{DS(ON)} - I_D$

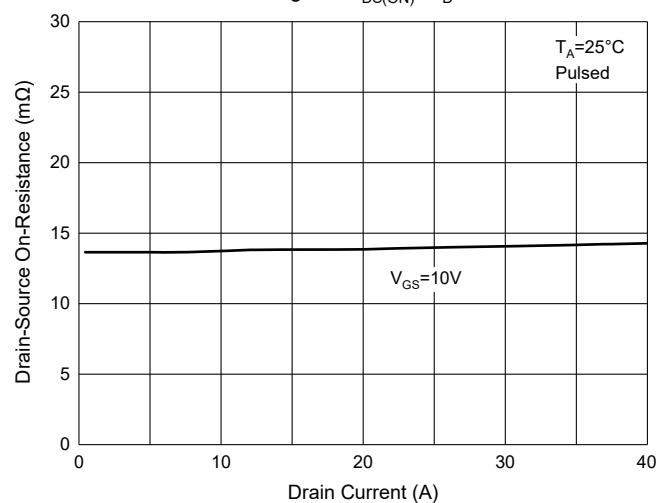


Fig. 4 - Normalized On Resistance Characteristics

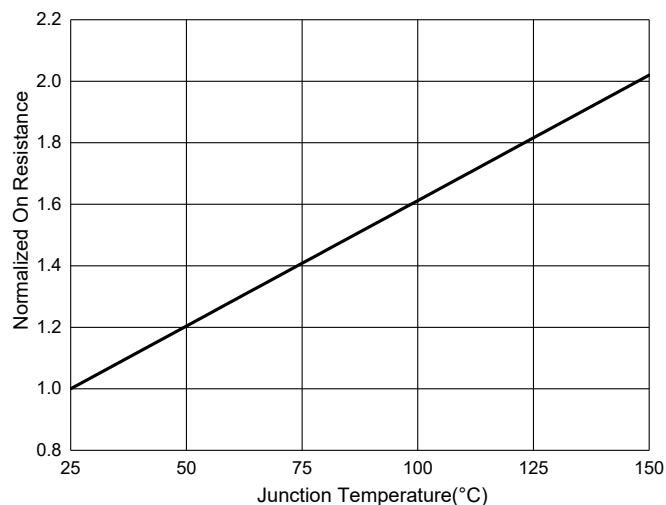


Fig. 5 - Capacitance Characteristics

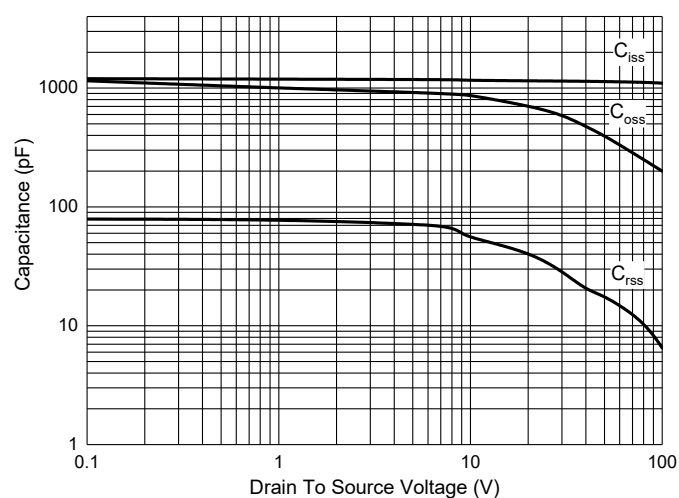
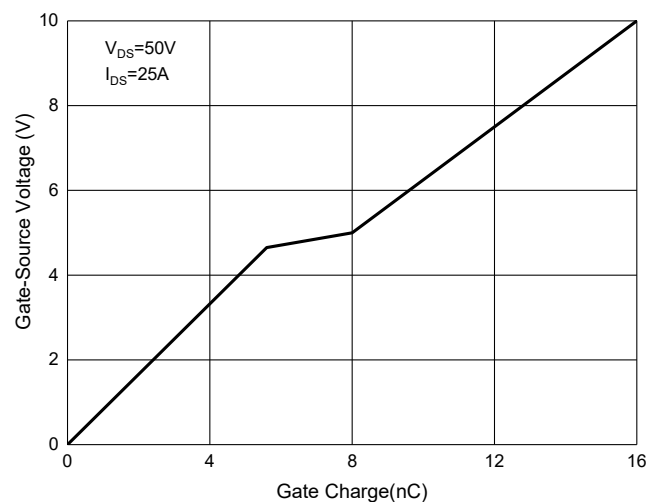


Fig. 6 - Gate Charge



## Curve Characteristics

Fig. 7 - Safe Operation Area

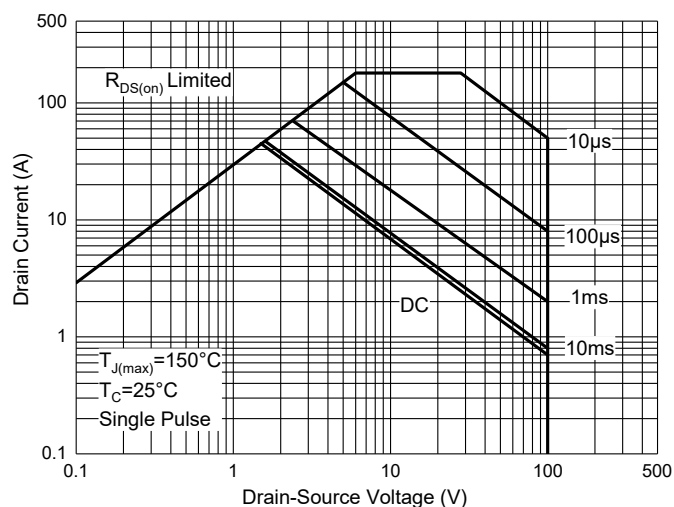


Fig. 8 - Power Derating Curve

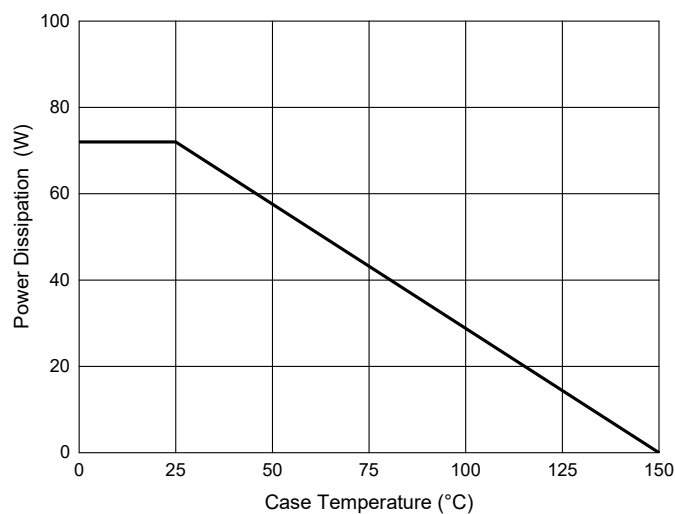
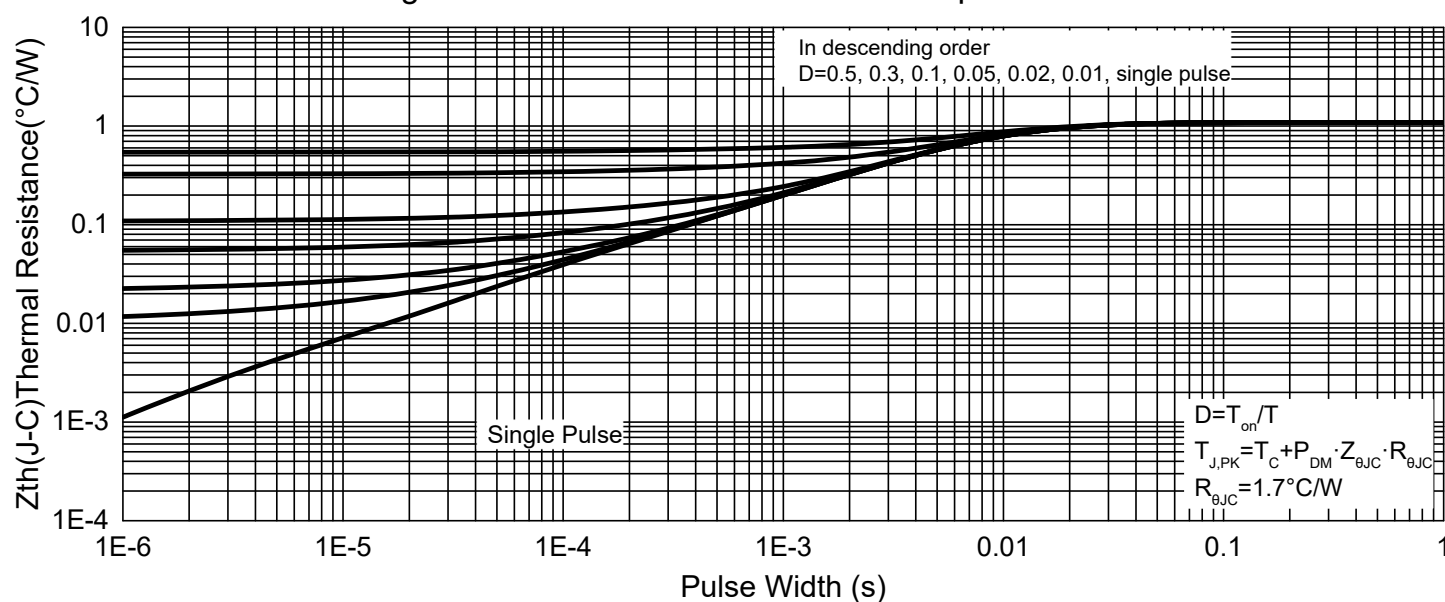


Fig. 9 - Maximum Transient Thermal Impedance



## Ordering Information

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

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