

Features

- Split Gate Trench MOSFET Technology
- Excellent Package for Heat Dissipation
- High Density Cell Design for Low $R_{DS(ON)}$
- 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

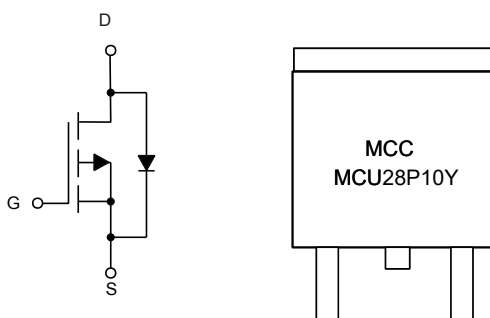
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 20°C/W Junction to Ambient($t \leq 10s$) (Note 2)
- Thermal Resistance: 55°C/W Junction to Ambient(Steady-State) (Note 2)
- Thermal Resistance: 1.3°C/W Junction to Case(Steady-State)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	-28	A
Pulsed Drain Current (Note 3)	I_{DM}	-112	A
Total Power Dissipation (Note 4)	P_D	96	W
Single Pulsed Avalanche Energy (Note 5)	E_{AS}	220	mJ

Note:

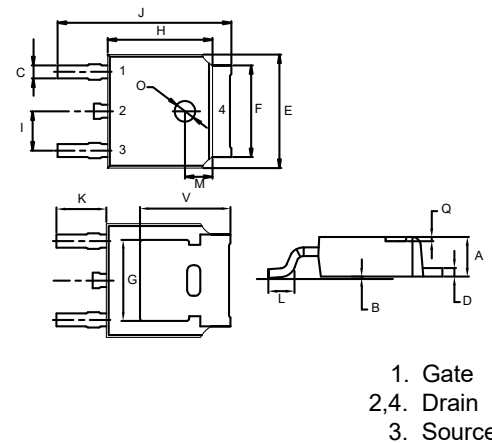
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ C$. 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. $V_{DD}=50V$, $R_G=25\Omega$, $L=1mH$, $I_{AS}=31A$.

Internal Structure and Marking Code



P-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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-100			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-100V, V_{GS}=0V$			-1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1		-2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-15A$		42	58	m Ω
		$V_{GS}=-4.5V, I_D=-7A$		46	65	
Diode Characteristics						
Continuous Body Diode Current	I_S				-28	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-20A$			-1.3	V
Reverse Recovery Time	t_{rr}	$I_S=-5A, di_f/dt=100A/\mu s$		104		ns
Reverse Recovery Charge	Q_{rr}			280		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=-50V, V_{GS}=0V, f=1MHz$		2100		pF
Output Capacitance	C_{oss}			236		
Reverse Transfer Capacitance	C_{rss}			48		
Total Gate Charge	Q_g	$V_{DS}=-50V, V_{GS}=-10V, I_D=-5A$		40		nC
Gate-Source Charge	Q_{gs}			7.8		
Gate-Drain Charge	Q_{gd}			8.6		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-50V, V_{GEN}=-10V, R_G=6\Omega, I_{DS}=-5A$		13		ns
Turn-On Rise Time	t_r			39		
Turn-Off Delay Time	$t_{d(off)}$			100.1		
Turn-Off Fall Time	t_f			105.3		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

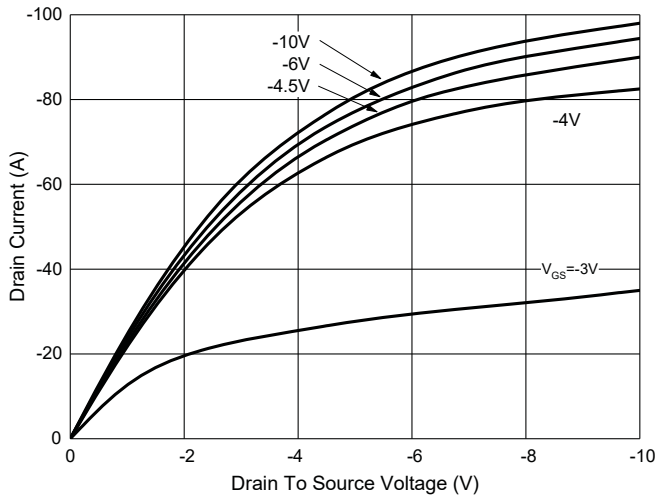


Fig. 2 - Transfer Characteristics

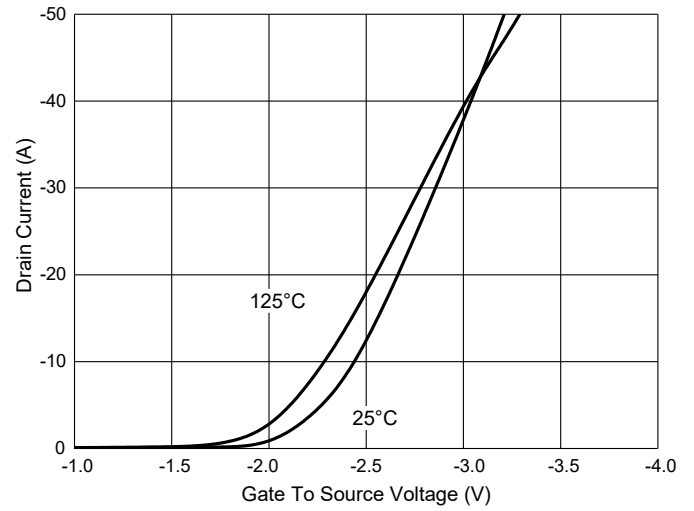


Fig. 3 - $R_{DS(ON)} - I_D$

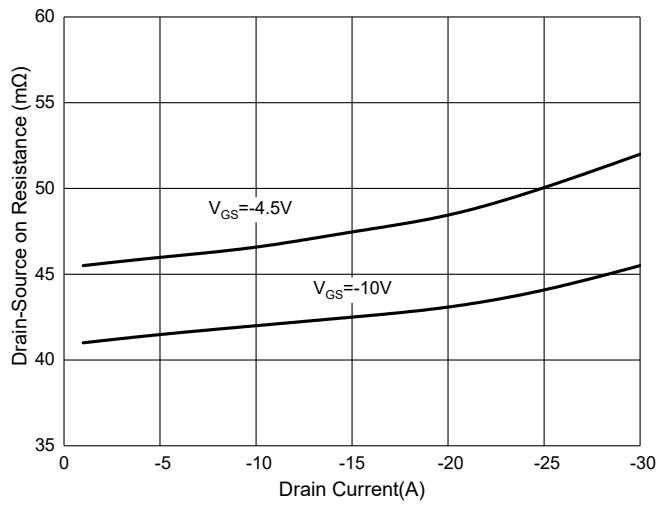


Fig. 4 - Normalized On Resistance Characteristics

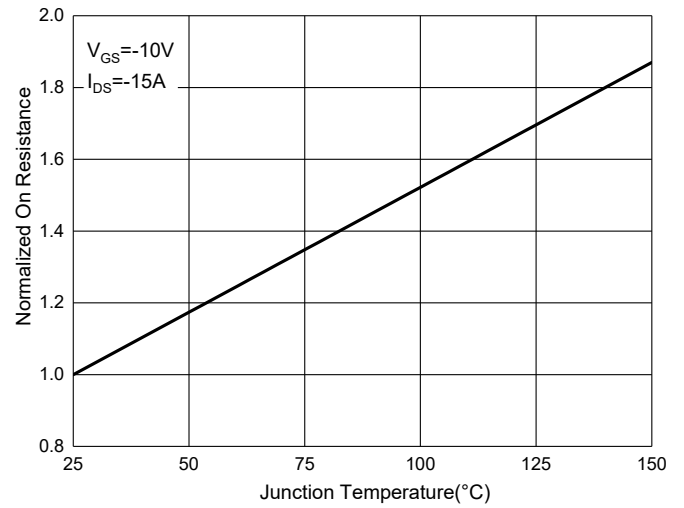


Fig. 5 - $R_{DS(ON)} - V_{GS}$

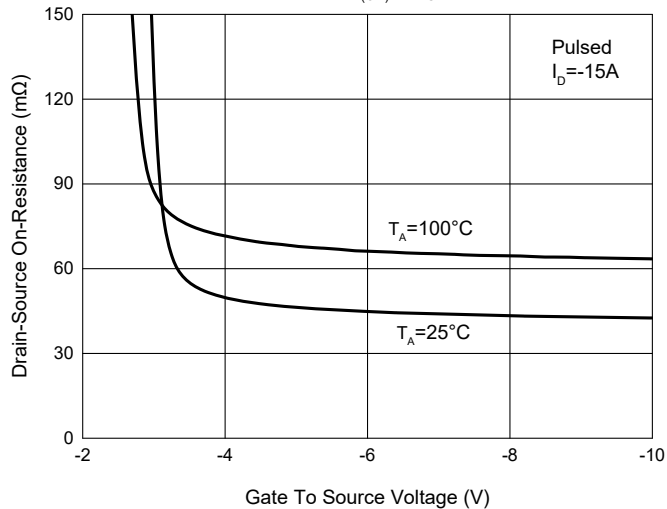
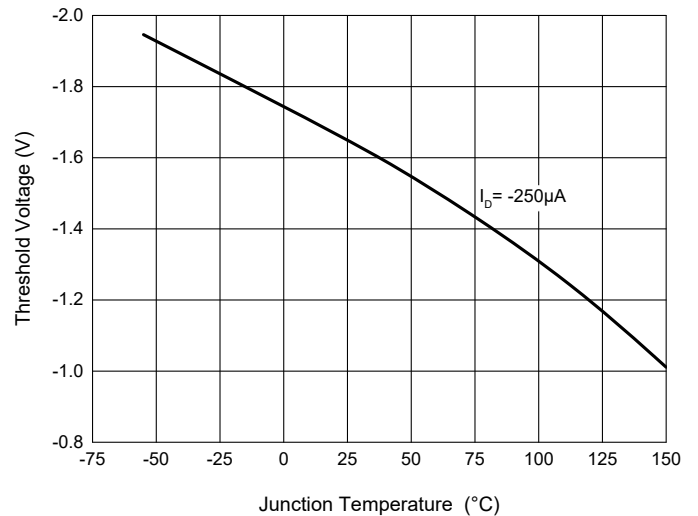


Fig. 6 - Threshold Voltage



Curve Characteristics

Fig. 7 - Capacitance Characteristics

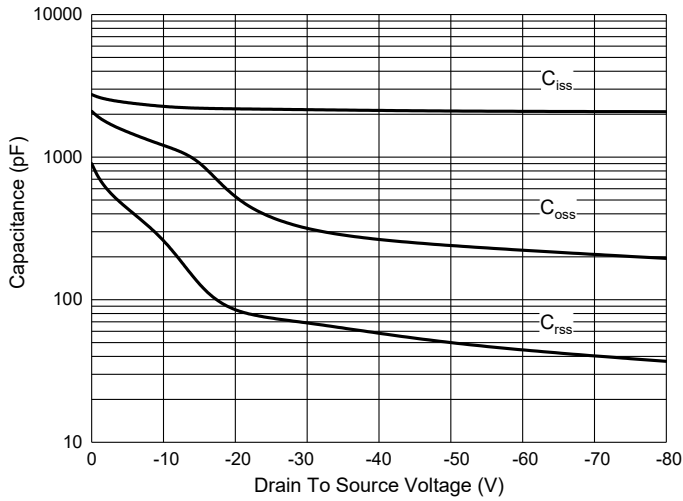


Fig. 8 - Gate Charge

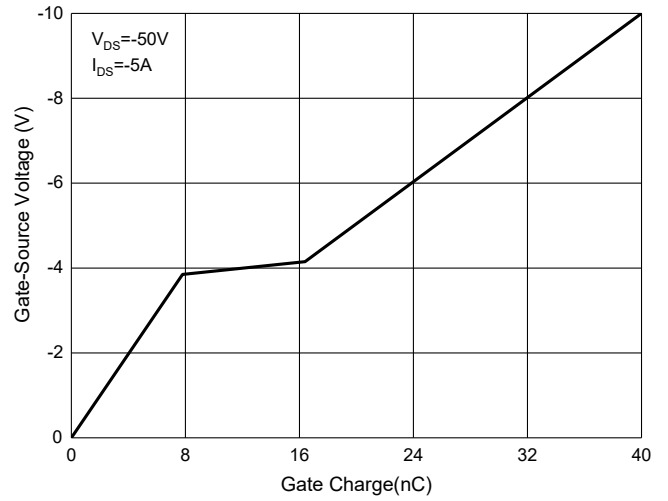


Fig. 9 - Safe Operation Area

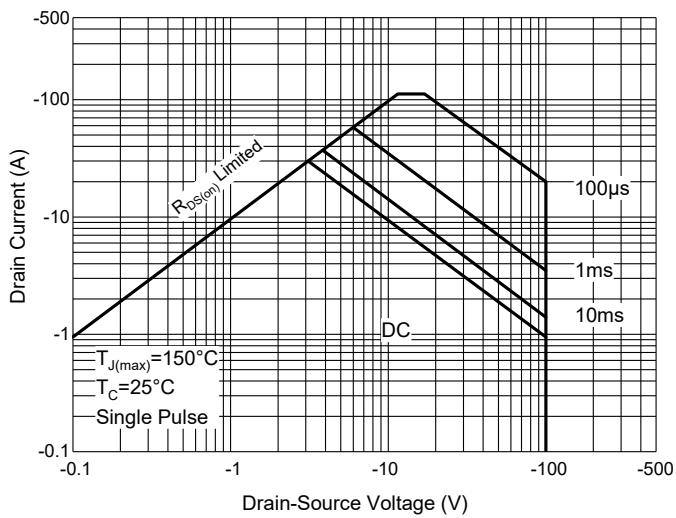


Fig. 10 - $P_D - T_C$

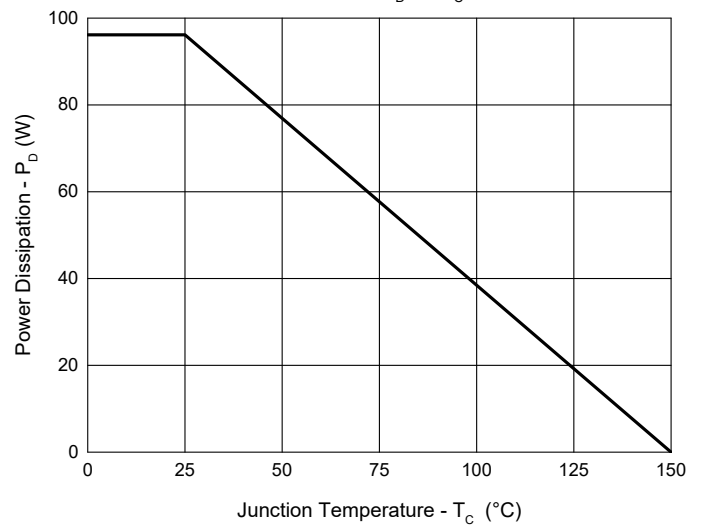
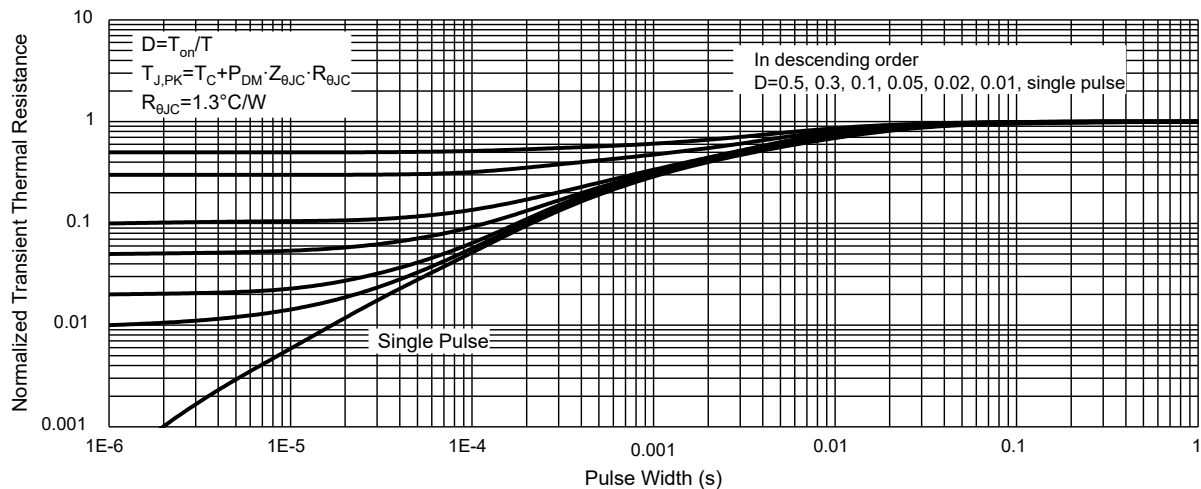


Fig. 11 - Normalized Transient Thermal Impedance



Ordering Information

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

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