

Features

- High Density Cell Design for Ultra Low $R_{DS(ON)}$
- Trench Power LV MOSFET Technology
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 3
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

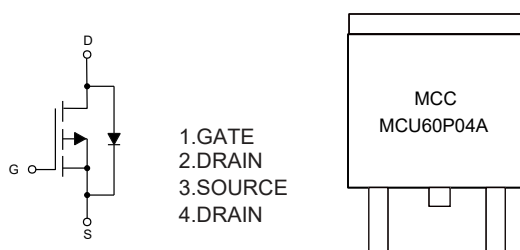
- Operating Junction Temperature Range : -55°C to + 150 °C
- Storage Temperature Range: -55°C to + 150°C
- Thermal Resistance: 50°C/W Junction to Ambient(Steady-State)^(Note2)
- Thermal Resistance: 1.8°C/W Junction to Case(Steady-State)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-60	A
		-38	
	$T_C=25^\circ\text{C}$		
	$T_C=100^\circ\text{C}$		
Pulsed Drain Current ^(Note3)	I_{DM}	-200	A
Total Power Dissipation ^(Note4)	P_D	69	W
Single Pulsed Avalanche Energy ^(Note5)	E_{AS}	100	mJ

Note:

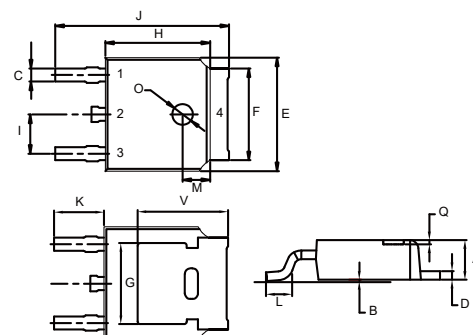
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The Power dissipation P_{DSM} is based on $R_{\theta JA} \leq 10\text{s}$ 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. $V_{DD}=-30\text{V}$, $V_{GS}=-10\text{V}$, $L=0.5\text{mH}$.

Internal Structure and Marking Code



P-Channel MOSFET

DPAK



DIMENSIONS					
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 (Ta=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 =-250μA	-40			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1.0	-1.5	-2.5	V
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-40V, V _{GS} =0V			-1	μA
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-20A		7.2	10	mΩ
		V _{DS} =-4.5V, I _D =-10A		8.9	12	
Gate Resistance	R _g	f=1MHz, Open Drain		6.0		Ω
Diode Characteristics						
Continuous Body Diode 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 =-30A, dI _F /dt=100A/μs		39.2		ns
Reverse Recovery Charge	Q _{rr}			35.3		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =-20V, V _{GS} =0V, f=1MHz		4766		pF
Output Capacitance	C _{oss}			375		
Reverse Transfer Capacitance	C _{rss}			342		
Total Gate Charge	Q _g	V _{DS} =-30V, V _{GS} =-10V, I _D =-30A		104.3		nC
Gate-Source Charge	Q _{gs}			8.97		
Gate-Drain Charge	Q _{gd}			21.81		
Turn-On Delay Time	t _{d(on)}	V _{DD} =-30V, V _{GS} =-10V, R _{GEN} =3 Ω, I _{DS} =-30A		8.8		ns
Turn-On Rise Time	t _r			8.2		
Turn-Off Delay Time	t _{d(off)}			203		
Turn-Off Fall Time	t _f			78.3		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

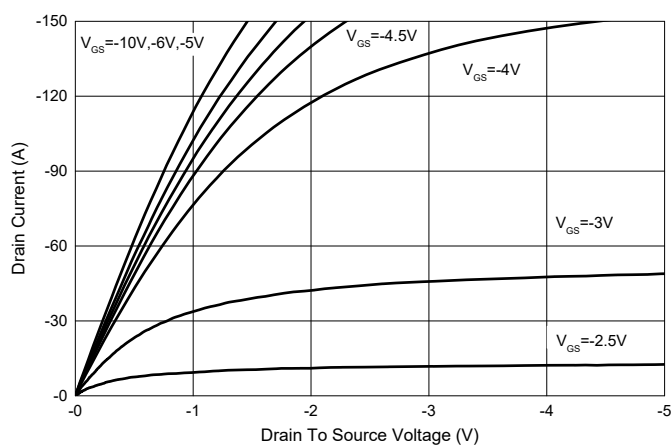


Fig. 2 - Transfer Characteristics

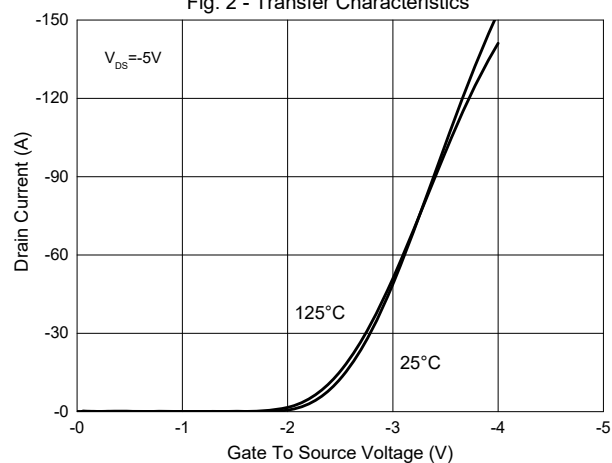


Fig. 3 - $R_{DS(ON)} - I_D$

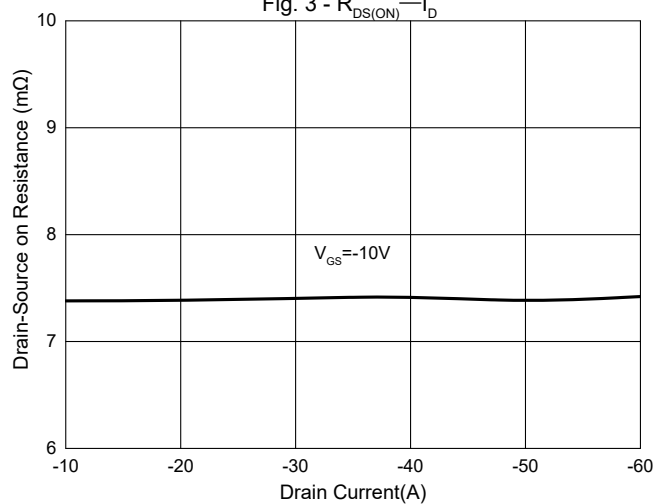


Fig. 4 - $R_{DS(ON)} - V_{GS}$

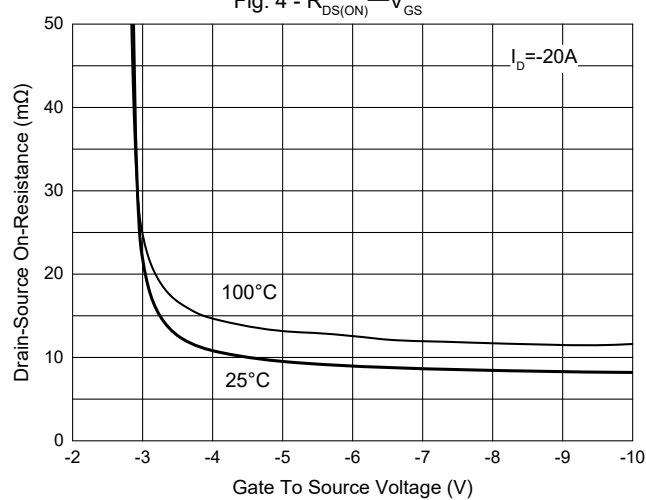


Fig. 5 - Normalized On Resistance Characteristics

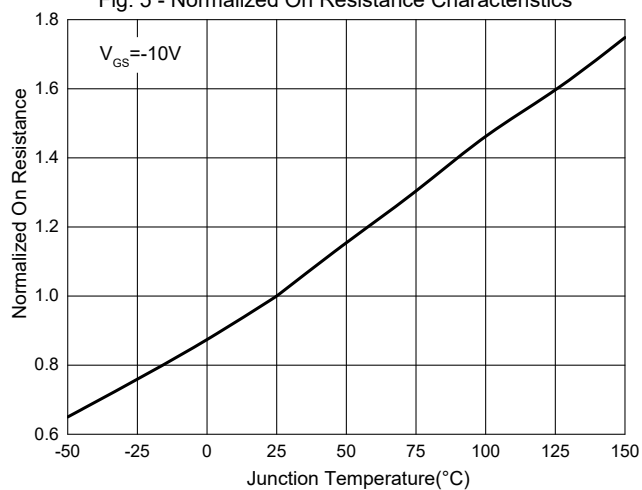
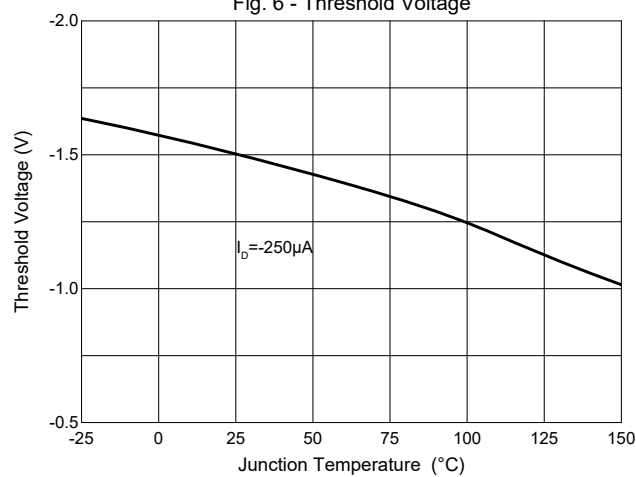


Fig. 6 - Threshold Voltage



Curve Characteristics

Fig. 7 - Capacitance Characteristics

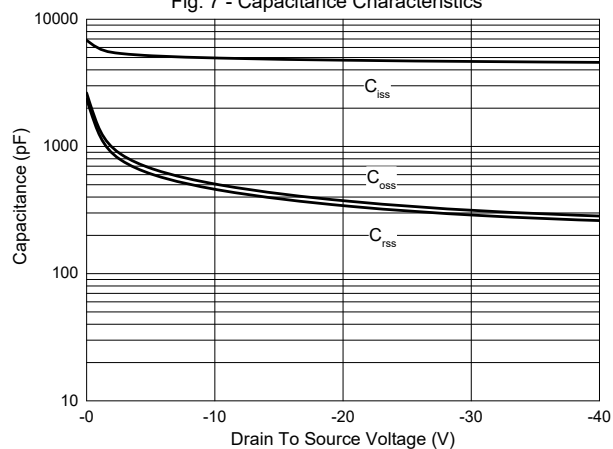


Fig. 8 - $I_s - V_{SD}$

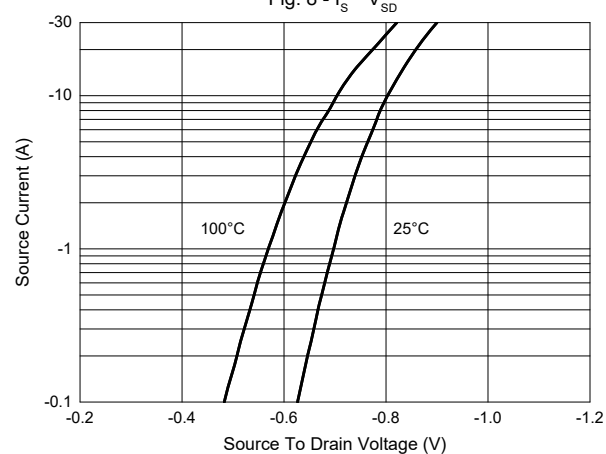


Fig. 9 - Gate Charge

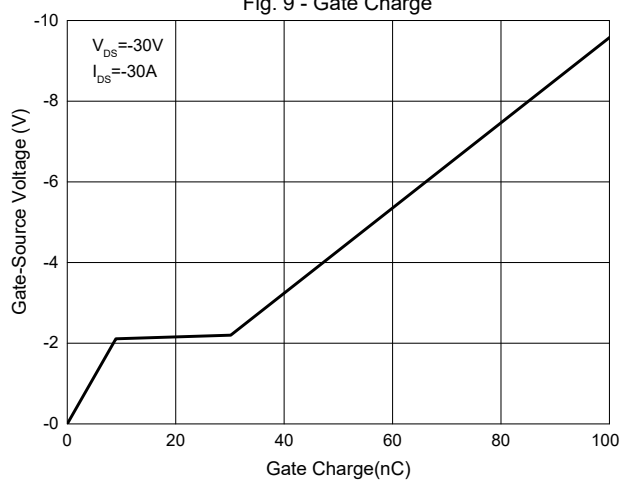


Fig. 10 - Current Dissipation

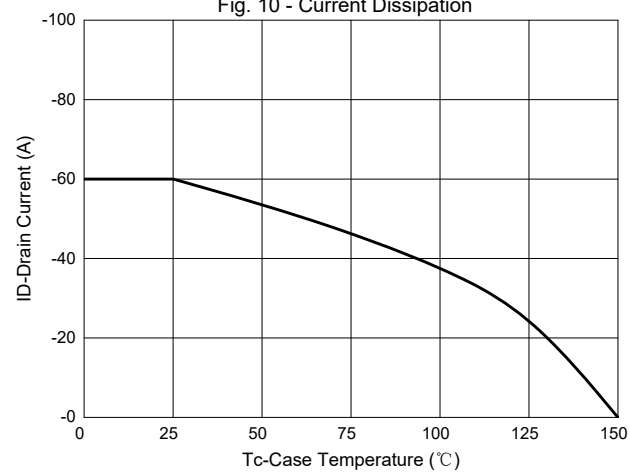
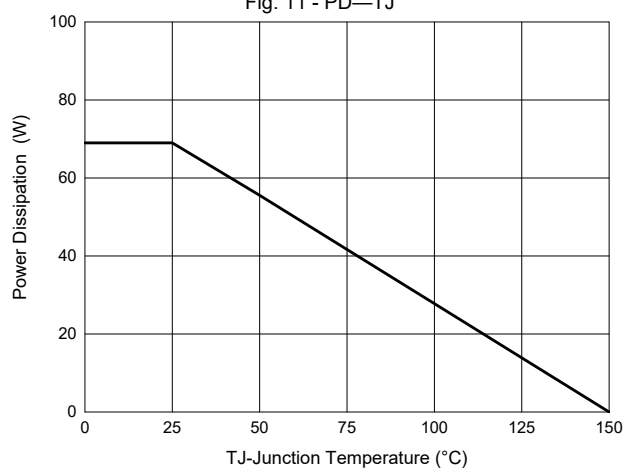


Fig. 11 - PD—TJ



Curve Characteristics

Fig. 12 - Safe Operation Area

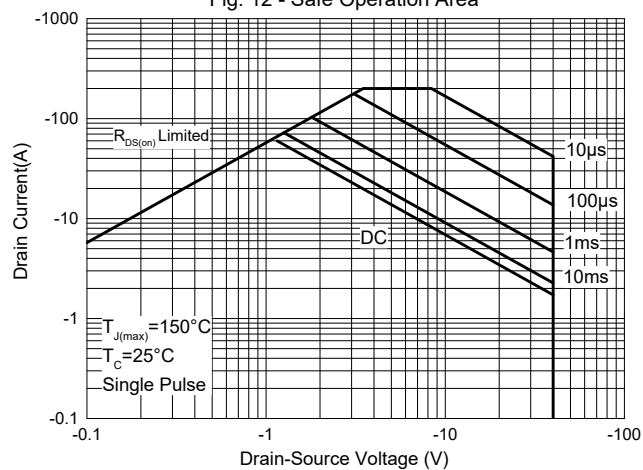
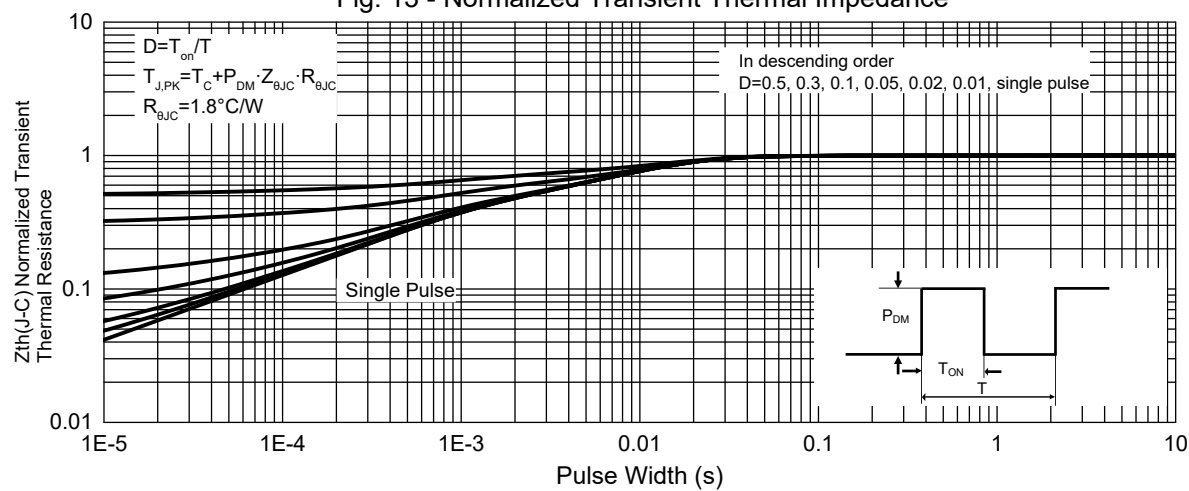


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

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

Revision History

Datasheet status	Version No	Release date	Update content
New product datasheet	Rev4-1	20230109	

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