

Features

- Trench Power MV MOSFET Technology
- Excellent Package for Heat Dissipation
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant(Note2)("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

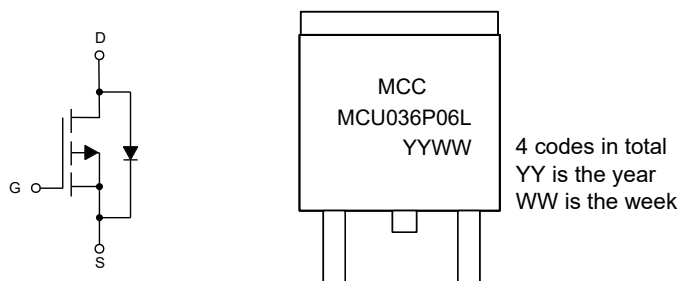
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 50°C/W Junction to Ambient(Note3)
- Thermal Resistance: 2.2°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	$T_C=25^\circ\text{C}$	I_D	A
	$T_C=100^\circ\text{C}$		
Pulsed Drain Current (Note4)	I_{DM}	-112	A
Total Power Dissipation (Note5)	P_D	56.8	W
Single Pulsed Avalanche Energy (Note6)	E_{AS}	54	mJ

Note:

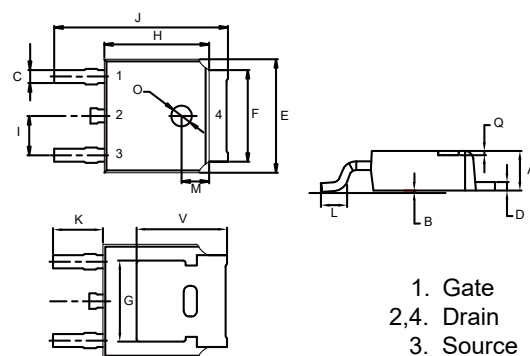
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. High Temperature Solder Exemption Applied, see EU Directive Annex 7(a)-I.
3. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$.
4. Repetitive rating; pulse width limited by max. junction temperature.
5. P_D is based on max. junction temperature, using junction-case thermal resistance.
6. $T_J=25^\circ\text{C}$, $V_{DD}=-45\text{V}$, $V_{GS}=-10\text{V}$, $R_G=25\Omega$, $L=0.5\text{mH}$.

Internal Structure and Marking Code



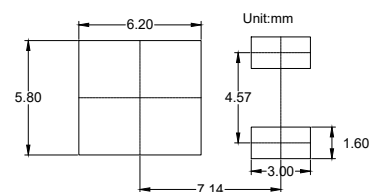
P-CHANNEL MOSFET

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.

Suggested Solder Pad Layout



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 =-250μA	-60			V
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-60V, V _{GS} =0V			-1	μA
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1	-1.5	-2	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-10A		28	36	mΩ
		V _{GS} =-4.5V, I _D =-5A		32	40	
Gate Resistance	R _g	f=1 MHz, Open Drain		3		Ω
Diode Characteristics						
Continuous Body Diode Current	I _S				-28	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =-10A			-1.2	V
Reverse Recovery Time	t _{rr}	I _F =-10A, di/dt=100A/us		22.5		ns
Reverse Recovery Charge	Q _{rr}			26		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =-30V,V _{GS} =0V,f=1MHz		2360		pF
Output Capacitance	C _{oss}			125		
Reverse Transfer Capacitance	C _{rss}			115		
Total Gate Charge	Q _g	V _{DS} =-30V,V _{GS} =-10V,I _D =-10A		50.9		nC
Gate-Source Charge	Q _{gs}			5.6		
Gate-Drain Charge	Q _{gd}			9.5		
Turn-On Delay Time	t _{d(on)}	V _{GS} =-10V,V _{DD} =-30V I _D =-10A, R _G =3Ω		9.6		ns
Turn-On Rise Time	t _r			11.8		
Turn-Off Delay Time	t _{d(off)}			53.2		
Turn-Off Fall Time	t _f			21.4		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

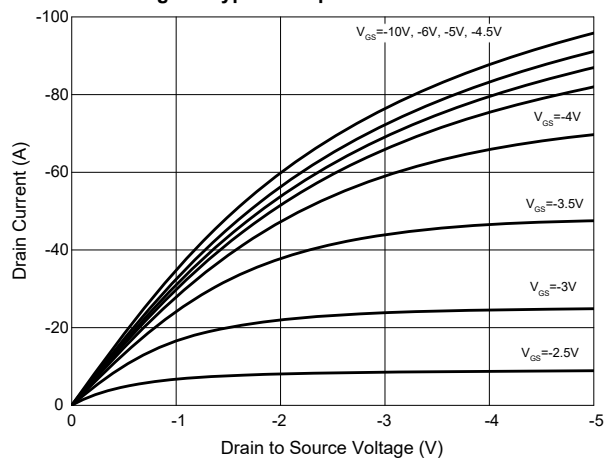


Fig. 2 - Transfer Characteristics

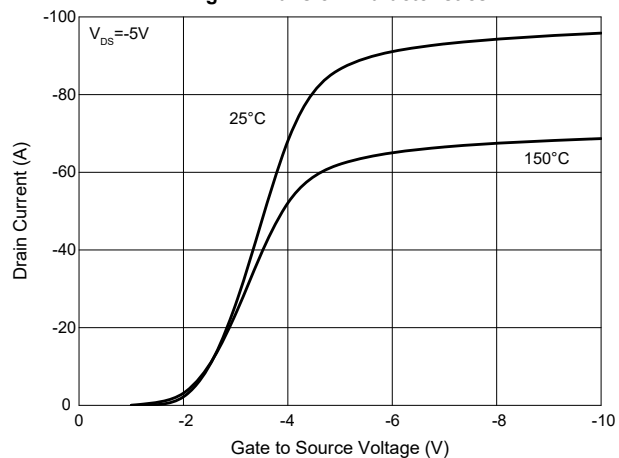


Fig. 3 - $R_{DS(ON)}$ - V_{GS}

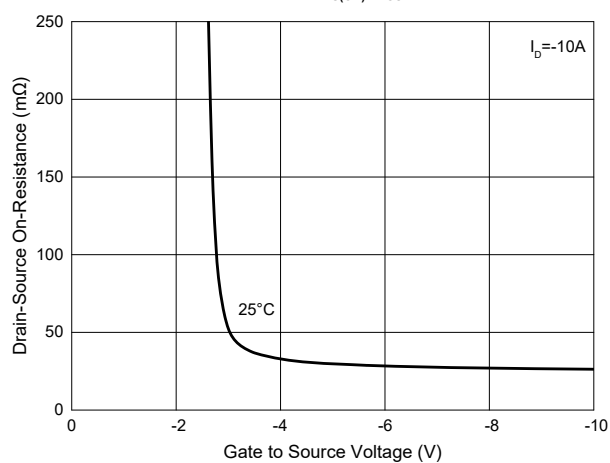


Fig. 4 - $R_{DS(ON)}$ - I_D

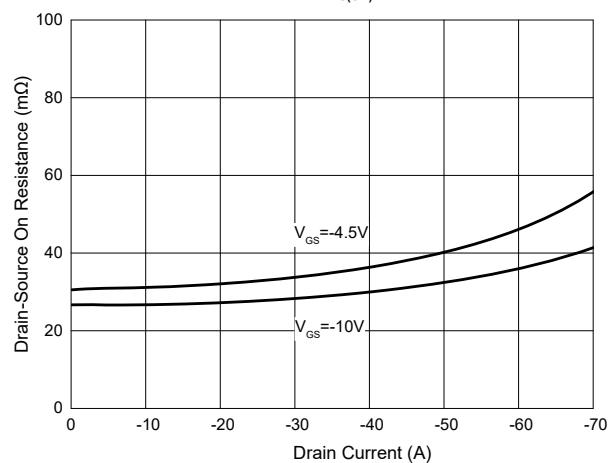


Fig. 5 - Capacitance Characteristics

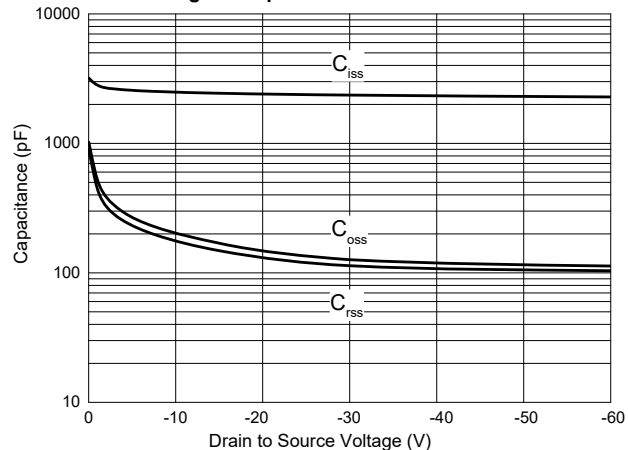
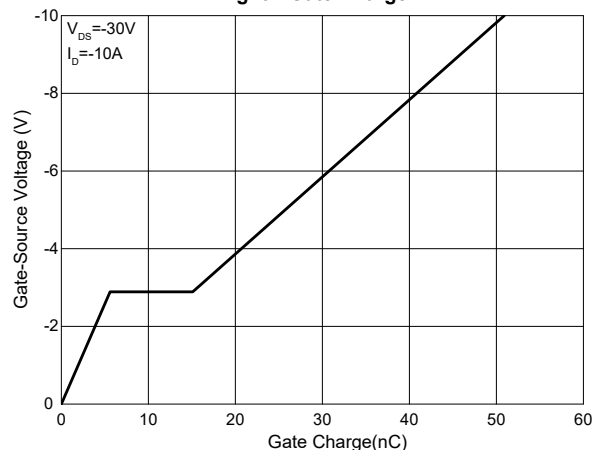


Fig. 6 - Gate Charge



Curve Characteristics

Fig. 7 - Normalized Threshold Voltage

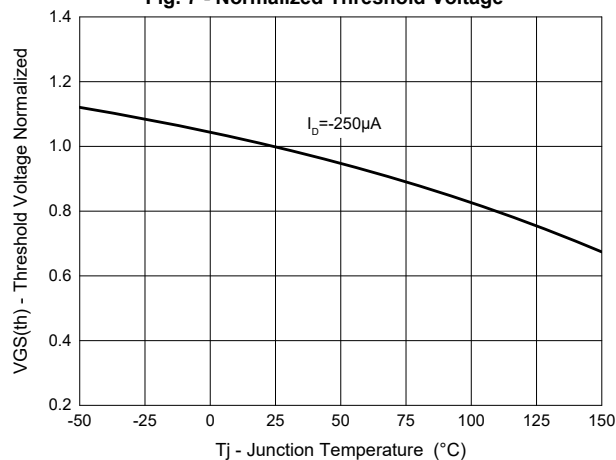


Fig. 8 - Normalized On Resistance Characteristics

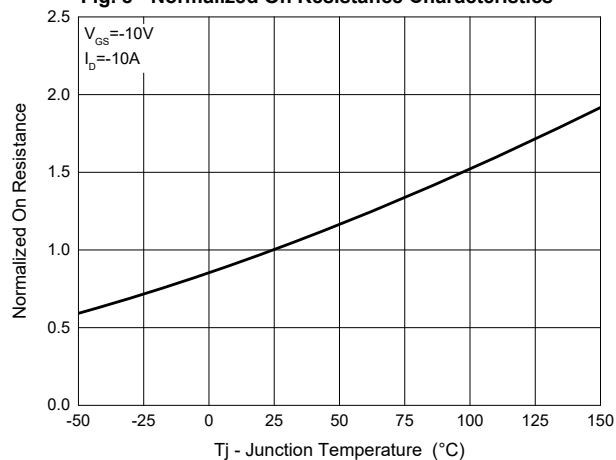


Fig. 9 - I_S - V_{SD}

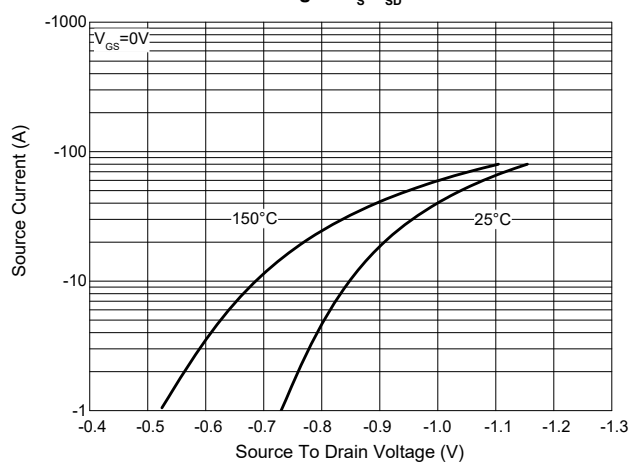


Fig. 10 - Drain Current

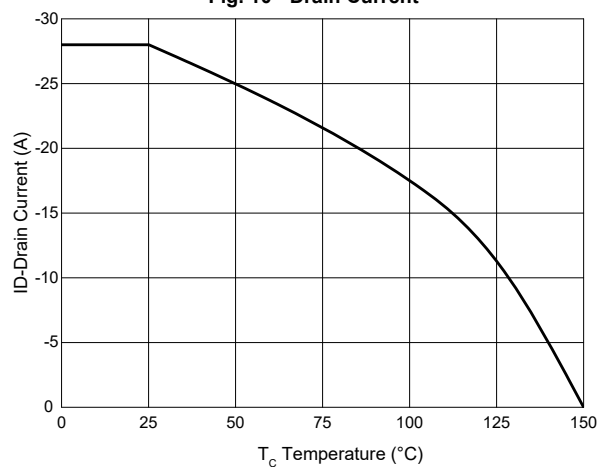
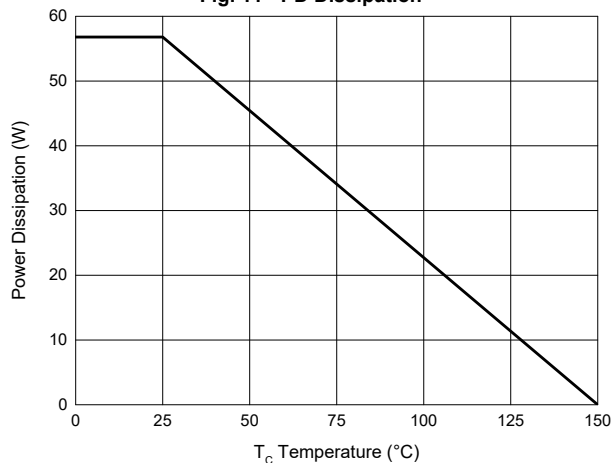


Fig. 11 - PD Dissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

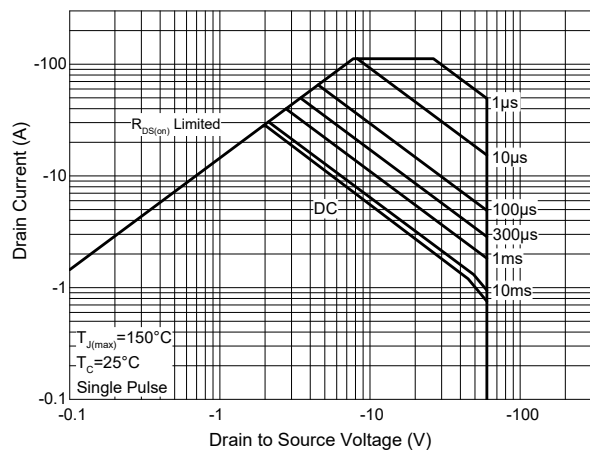
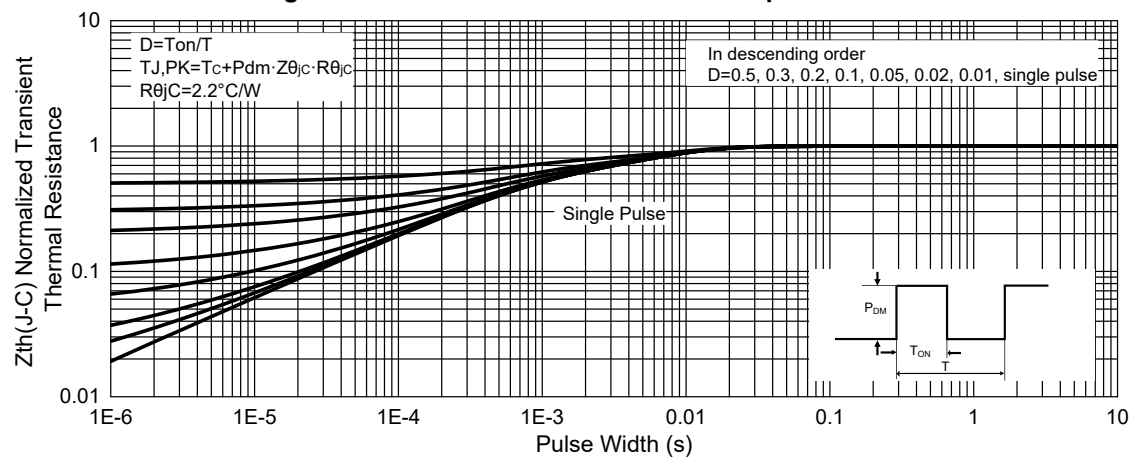


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

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

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