



**THE DATASHEET OF
MCT06P10-TP**



Features

- Trench MV MOSFET Technology
- 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

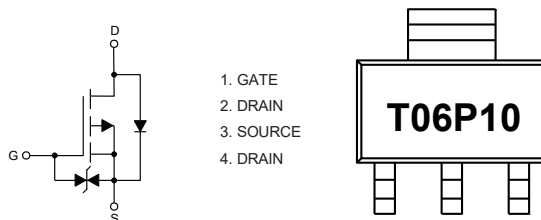
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance:60°C/W Junction to Ambient^(Note2)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	$T_A=25^\circ\text{C}$	-6
		$T_A=100^\circ\text{C}$	-3.8
Pulsed Drain Current ^(Note 3)	I_{DM}	- 24	A
Total Power Dissipation ^(Note4)	P_D	2.1	W

Note:

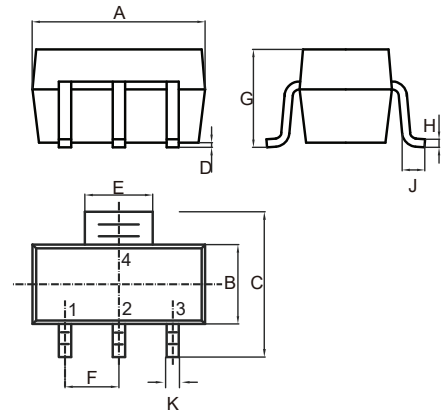
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction-ambient thermal resistance.

Internal Structure and Marking Code



P-Channel Power MOSFET

SOT-223



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.248	0.264	6.30	6.70	
B	0.130	0.146	3.30	3.70	
C	0.264	0.287	6.70	7.30	
D	0.001	0.004	0.02	0.10	
E	0.114	0.122	2.90	3.10	
F	0.091		2.30		TYP.
G	---	0.071	---	1.80	
H	0.009	0.014	0.23	0.35	
J	0.030	---	0.75	---	
K	0.026	0.033	0.66	0.84	

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}	$V_{DS}=0V, V_{GS}=\pm 16V$			± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-100V, V_{GS}=0V$			-1	
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.2	-1.7	-2.8	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-6A$		168	205	$m\Omega$
		$V_{GS}=-4.5V, I_D=-6A$		182	250	
Gate Resistance	R_g	$f=1\text{ MHz, Open drain}$		5		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				-6	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-6A$			-1.2	V
Reverse Recovery Time	t_{rr}	$I_F=-6A, dI_F/dt=100A/\mu s$		40		ns
Reverse Recovery Charge	Q_{rr}			95		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=-25V, V_{GS}=0V, f=1\text{ MHz}$		1707		pF
Output Capacitance	C_{oss}			64		
Reverse Transfer Capacitance	C_{rss}			60		
Total Gate Charge	Q_g	$V_{DS}=-50V, V_{GS}=-10V, I_D=-6A$		35		nC
Gate-Source Charge	Q_{gs}			2.7		
Gate-Drain Charge	Q_{gd}			4.2		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-50V, V_{GS}=-10V, R_{GEN}=9.1\Omega, I_D=-6A$		10		ns
Turn-On Rise Time	t_r			38		
Turn-Off Delay Time	$t_{d(off)}$			78		
Turn-Off Fall Time	t_f			32		

Curve Characteristics

Fig.1 - Typical Output Characteristics

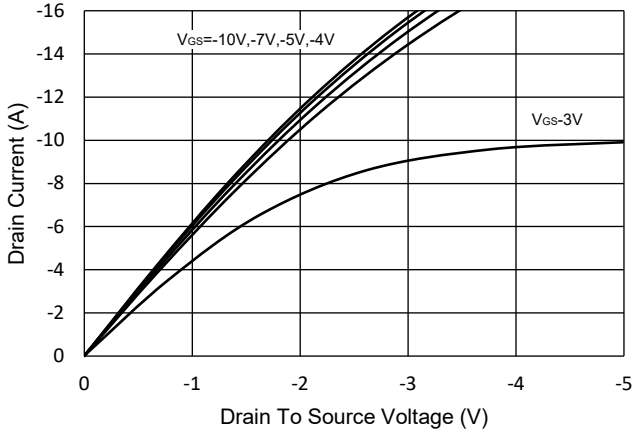


Fig.2 - Transfer Characteristic

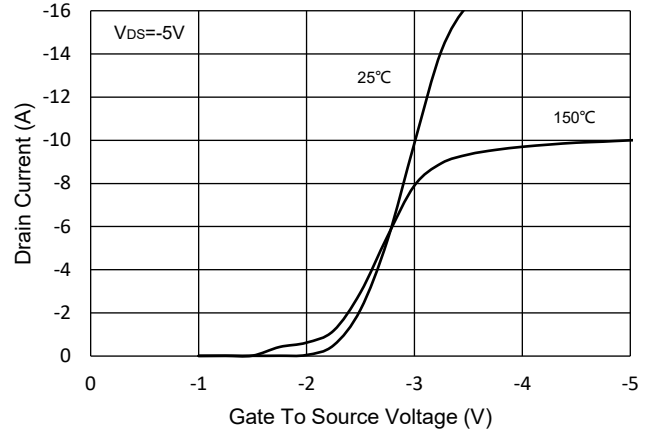


Fig.3 - $R_{DS(ON)}$ - V_{GS}

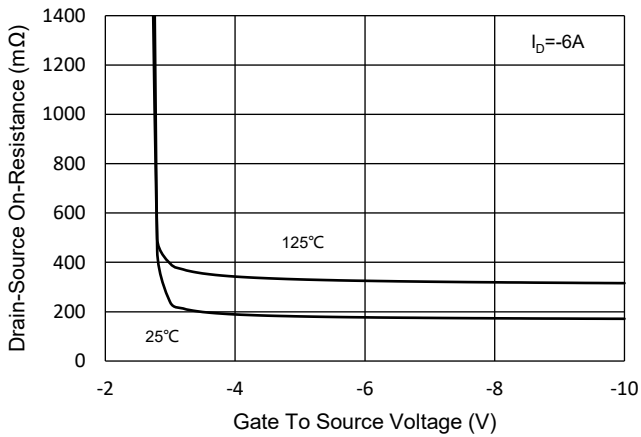


Fig.4 - $R_{DS(ON)}$ - I_D

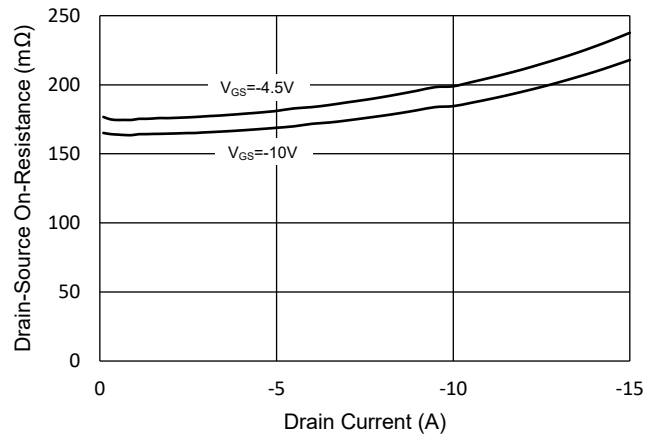


Fig.5 - Capacitance Characteristics

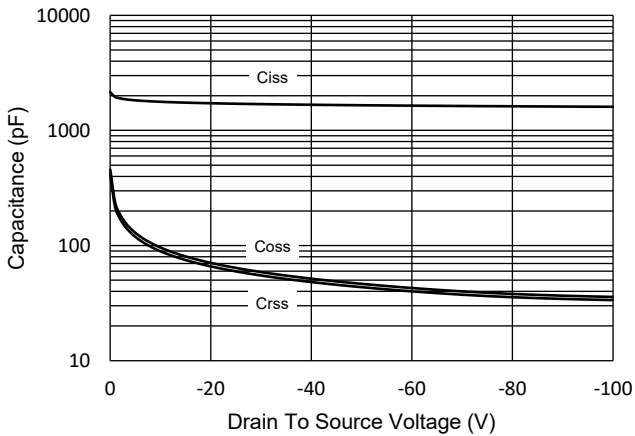
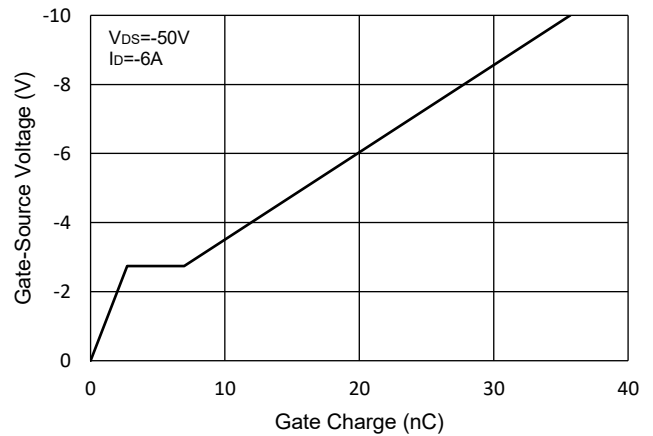


Fig.6 - Gate Charge



Curve Characteristics

Fig.7 - Normalized Threshold Voltage

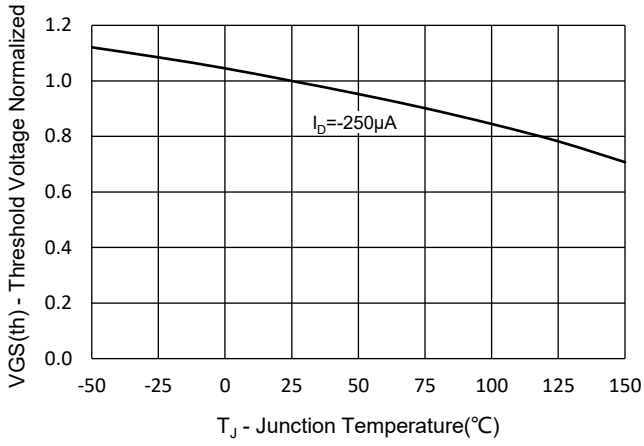


Fig.8 - Normalized On Resistance Characteristics

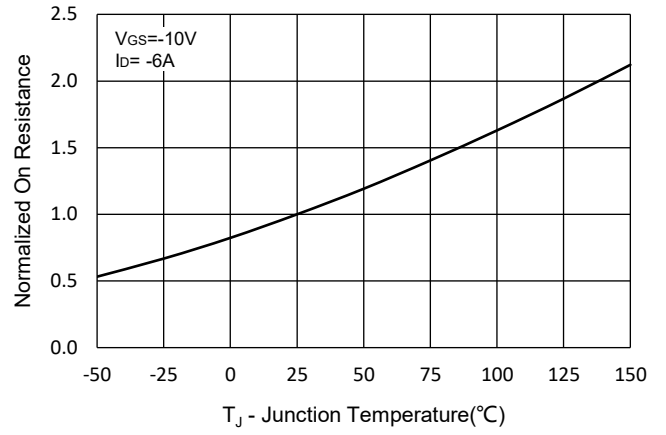


Fig.9 - I_S - V_{SD}

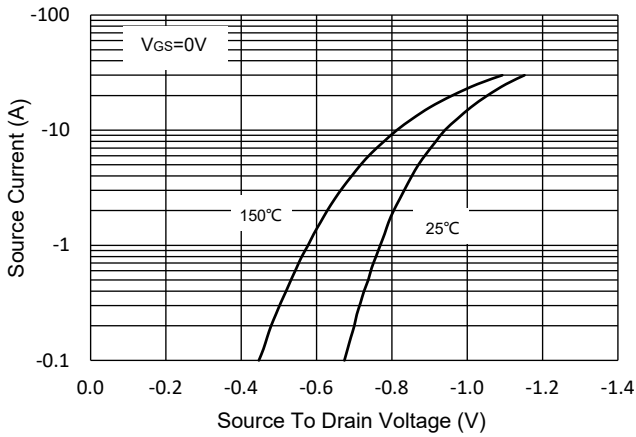


Fig.10 - Drain Current

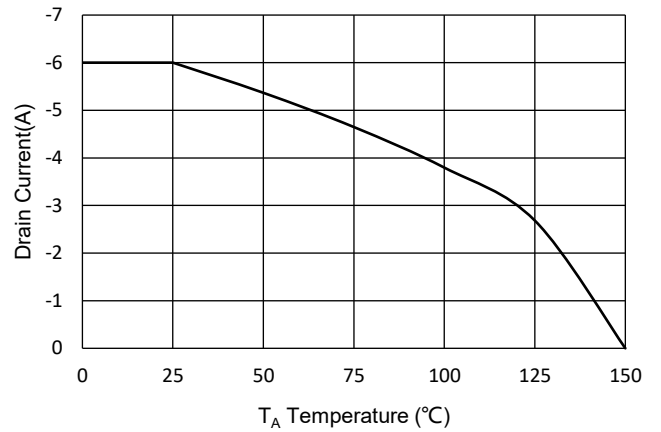
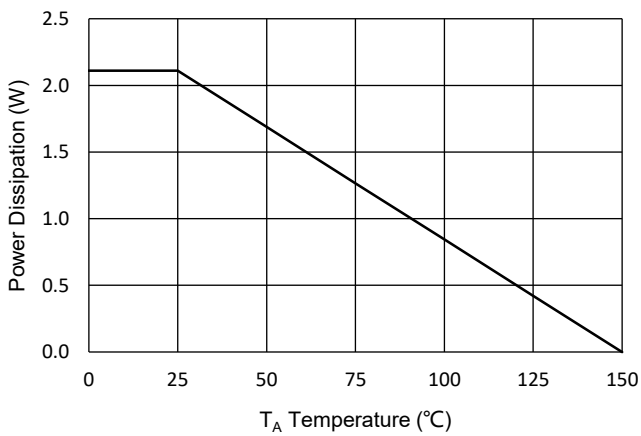


Fig.11 - PD Dissipation



Curve Characteristics

Fig.12 - Safe Operation Area

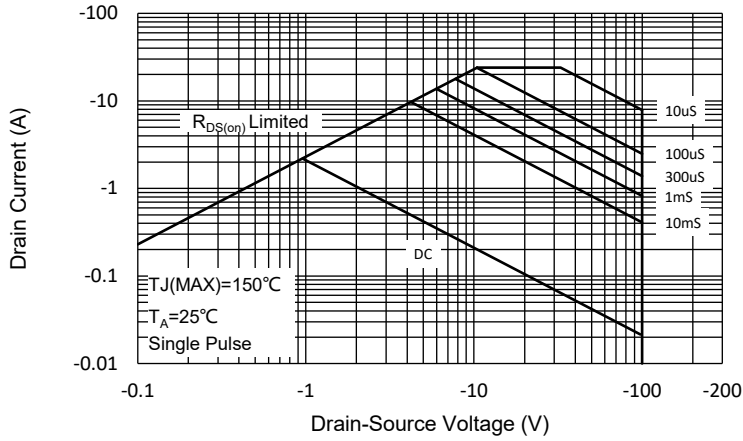
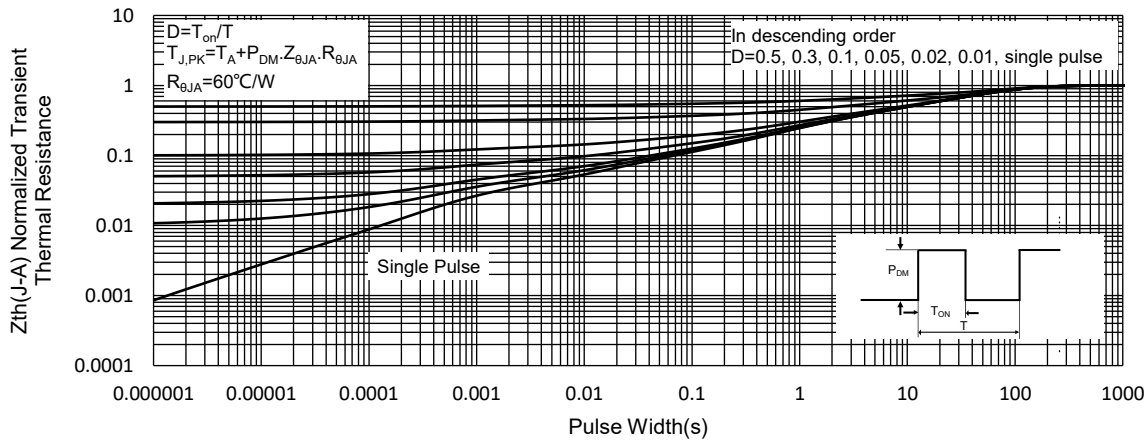


Fig.13 - Normalized Transient Thermal Impedance



Ordering Information

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

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