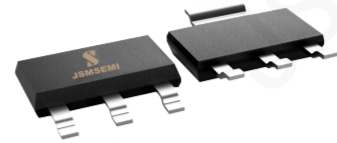


GENERAL DESCRIPTION

This MCT06P10 use advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

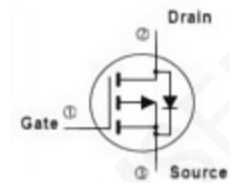


SOT-223

FEATURE

- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-100V	190mΩ@-10V	-6A
	210mΩ@-4.5V	



EQUIVALENT CIRCUIT

Maximum ratings ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-100	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current	I_D	-6	A
Pulsed Drain Current(note1)	I_{DM}	-10	
Power Dissipation(note3)	P_D	3.1	W
Thermal Resistance from Junction to Ambient(note3)	$R_{\theta JA}$	40	$^{\circ}\text{C/W}$
Operation Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

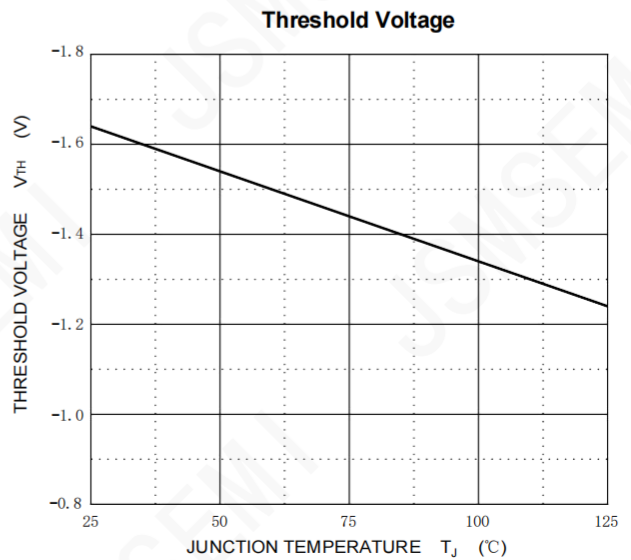
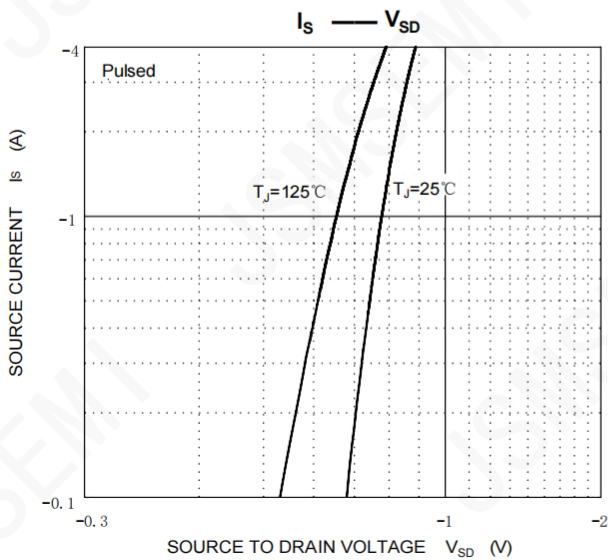
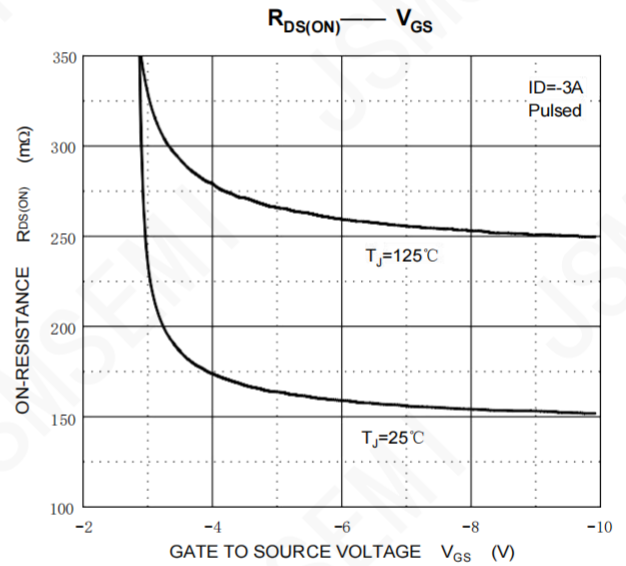
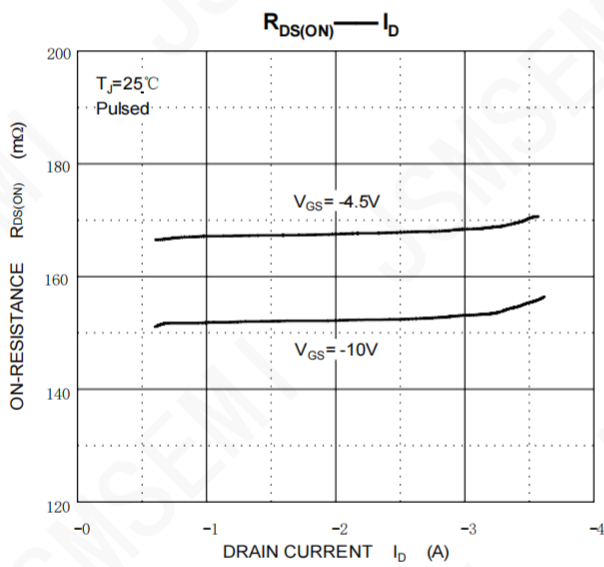
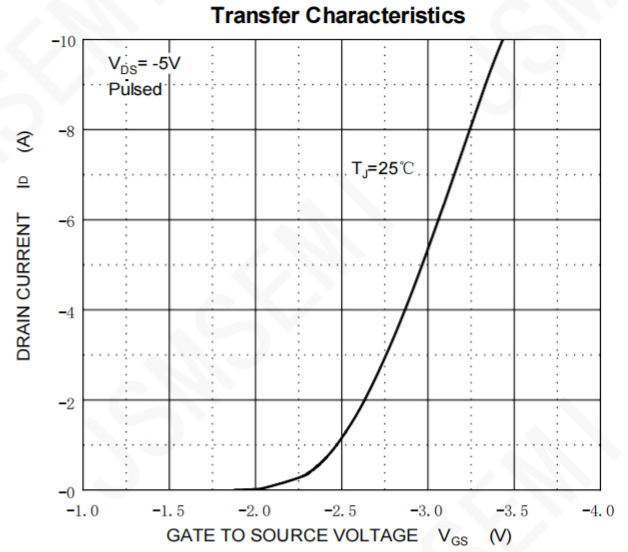
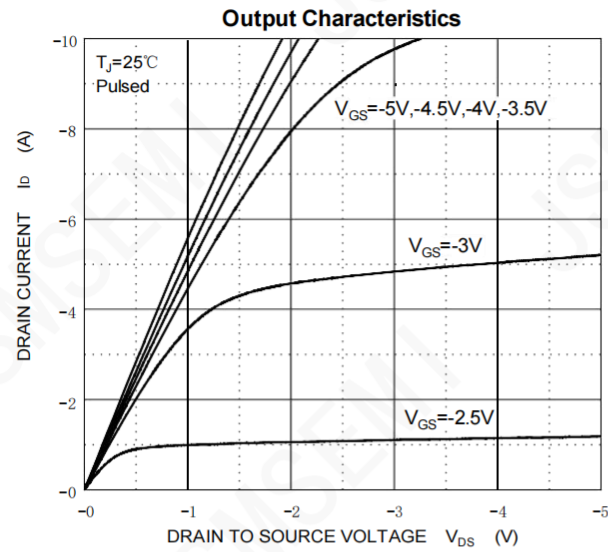
MOSFET ELECTRICAL CHARACTERISTICS
T_a=25 °C unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-source breakdown voltage	V(BR) DSS	V _{GS} = 0V, I _D = -250μA	-100			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -100V, V _{GS} = 0V, T _J = 25°C			-1	μA
		V _{DS} = -100V, V _{GS} = 0V, T _J = 125°C			-1	mA
Gate-source leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
On characteristics						
Drain-source on-resistance (note 3)	R _{DS(on)}	V _{GS} = -10V, I _D = -3A		153	190	mΩ
		V _{GS} = -4.5V, I _D = -1A		166	210	mΩ
Forward transconductance	g _{FS}	V _{DS} = -5V, I _D = -3A		7		S
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1	-1.75	-3	V
Dynamic Characteristics (note 4)						
Input capacitance	C _{iss}	V _{DS} = -25V, V _{GS} = 0V, f = 1MHz		1419	2500	pF
Output capacitance	C _{oss}			89	170	pF
Reverse transfer capacitance	C _{rss}			45	90	pF
Gate resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		16		pF
Switching Characteristics (note 4)						
Turn-on delay time	t _{d(on)}	V _{GS} = -10V, V _{DS} = -50V, I _D = -2.6A, R _{GEN} = 25Ω (note 1,2)		18	36	ns
Turn-on rise time	t _r			8	16	ns
Turn-off delay time	t _{d(off)}			100	200	ns
Turn-off fall time	t _f			30	60	ns
Total Gate Charge	Q _g	V _{DS} = -25V, I _D = -2.6A, V _{GS} = 4.5V (note 1,2)		20	40	nC
Gate-Source Charge	Q _{gs}			3.5	7	nC
Gate-Drain Charge	Q _{gd}			4.6	9	nC
Drain-source diode characteristics and maximum ratings						
Diode forward voltage (note 3)	V _{SD}	I _S = -1A, V _{GS} = 0V		-0.75	-1.2	V
Continuous drain-source diode forward current	I _S				-6	A
Pulsed drain-source diode forward current (note 1)	I _{SM}				-10	A

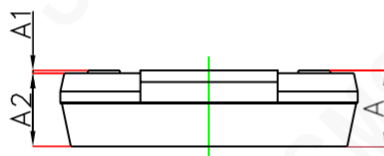
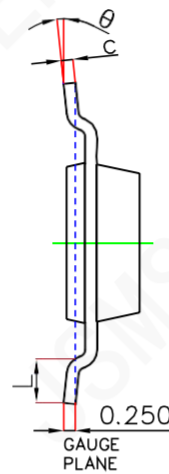
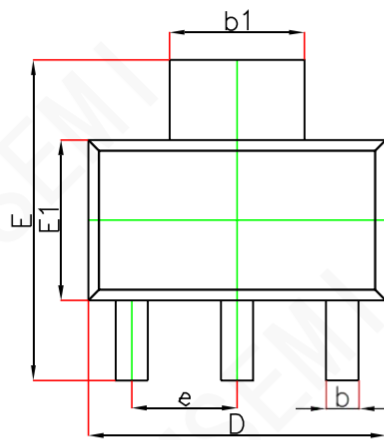
Note :

1. Pulse width < 300μs, Duty cycle < 2%.
2. Essentially independent of operating temperature typical characteristics.
3. R_{θJA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. Mounted on a 1 inch² with 2oz. square pad of copper.
4. Guaranteed by design, not subject to production testing.

Typical Characteristics

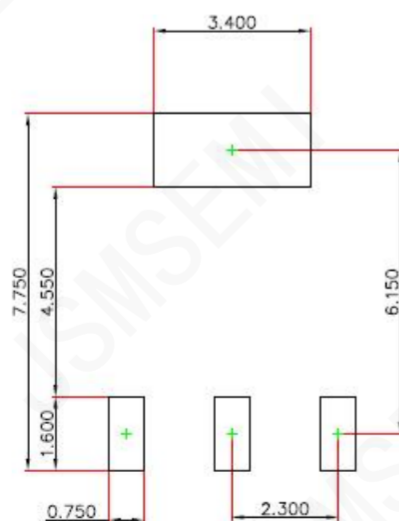


Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	—	1.800	—	0.071
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.840	0.026	0.033
b1	2.900	3.100	0.114	0.122
c	0.230	0.350	0.009	0.014
D	6.300	6.700	0.248	0.264
E	6.700	7.300	0.264	0.287
E1	3.300	3.700	0.130	0.146
e	2.300(BSC)		0.091(BSC)	
L	0.750	—	0.030	—
θ	0°	10°	0°	10°

Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.050\text{mm}$.
3. The pad layout is for reference purposes only.