

## Features

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

## Maximum Ratings

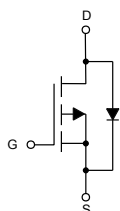
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature: -55°C to +150°C
- Thermal Resistance: 162°C/W Junction to Ambient (Note2)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V <sub>DS</sub>	-100	V
Gate-Source Voltage		V <sub>GS</sub>	±20	V
Continuous Drain Current	T <sub>A</sub> =25°C	I <sub>D</sub>	-1	A
	T <sub>A</sub> =100°C		-0.63	
Pulsed Drain Current <sup>(Note3)</sup>		I <sub>DM</sub>	-4	A
Total Power Dissipation <sup>(Note4)</sup>		P <sub>D</sub>	0.77	W

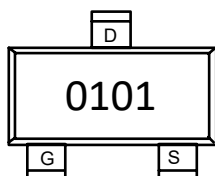
Note:

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 1in<sup>2</sup> 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

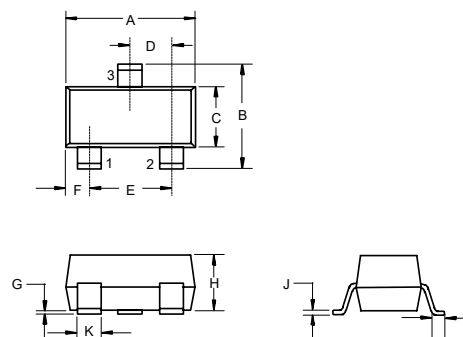


1. GATE
2. SOURCE
3. DRAIN



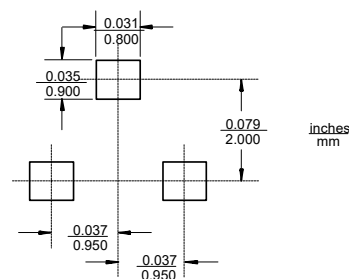
## P-Channel MOSFET

## SOT-23



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.110	0.120	2.80	3.04	
B	0.083	0.104	2.10	2.64	
C	0.047	0.055	1.20	1.40	
D	0.034	0.041	0.85	1.05	
E	0.067	0.083	1.70	2.10	
F	0.018	0.024	0.45	0.60	
G	0.0004	0.006	0.01	0.15	
H	0.035	0.043	0.90	1.10	
J	0.003	0.007	0.08	0.18	
K	0.012	0.020	0.30	0.51	
L	0.007	0.020	0.20	0.50	

### Suggested Solder Pad Layout

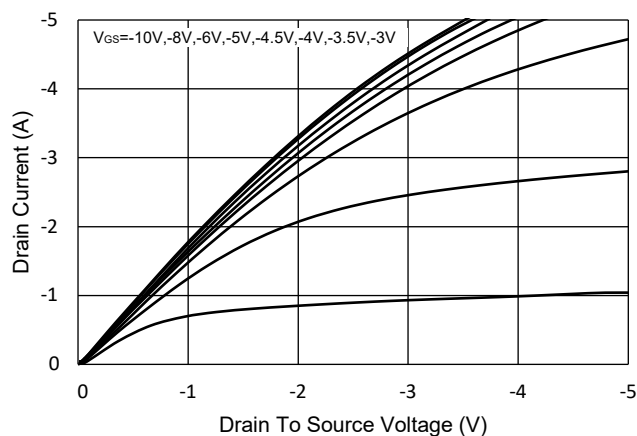


**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

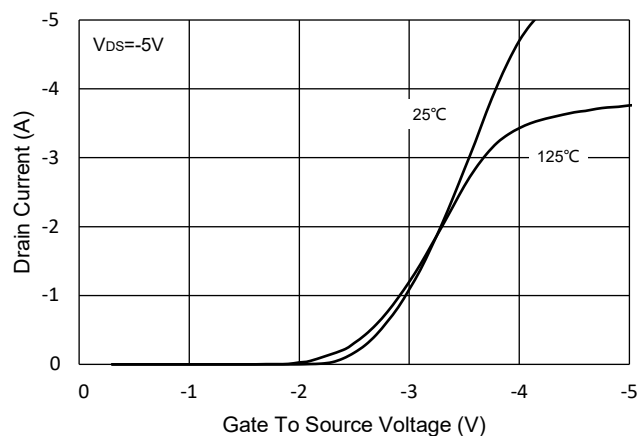
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	-100			V
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-100V, V <sub>GS</sub> =0V			-1	μA
Gate-Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-1.5	-2.2	-3.0	V
Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-1.0A		560	800	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-0.5A		620	1000	
Gate Resistance	R <sub>G</sub>	f=1 MHz, Open drain		4.6		Ω
Forward Tranconductance	g <sub>FS</sub>	V <sub>DS</sub> =-5V, I <sub>D</sub> =-1A		5		S
Diode Characteristics						
Continuous Body Diode Current	I <sub>S</sub>				-1	A
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =-1A			-1.2	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =-1A, dI <sub>F</sub> /dt=100A/μs		28		ns
Reverse Recovery Charge	Q <sub>rr</sub>			40		nC
Dynamic Characteristics						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-40V,V <sub>GS</sub> =0V,f=1MHz		342		pF
Output Capacitance	C <sub>oss</sub>			18.3		
Reverse Transfer Capacitance	C <sub>rss</sub>			14.3		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-10V,V <sub>GS</sub> =-10V,I <sub>D</sub> =-1A		7.8		nC
Gate-Source Charge	Q <sub>gs</sub>			1.5		
Gate-Drain Charge	Q <sub>gd</sub>			0.98		
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =-10V, V <sub>GS</sub> =-10V, R <sub>GEN</sub> =2.5Ω, I <sub>D</sub> = -1A		6.1		ns
Turn-On Rise Time	t <sub>r</sub>			2.7		
Turn-Off Delay Time	t <sub>d(off)</sub>			12		
Turn-Off Fall Time	t <sub>f</sub>			3.8		

## Curve Characteristics

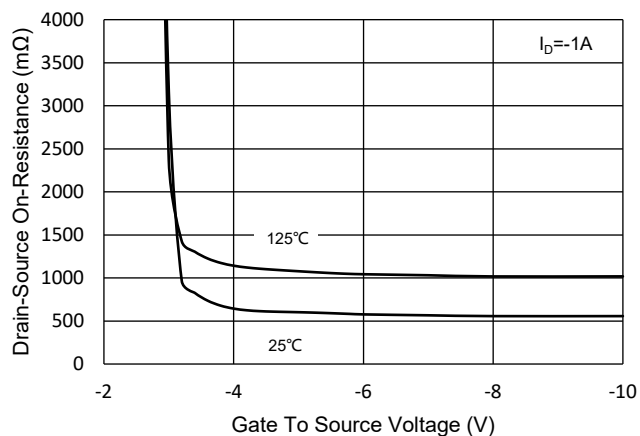
**Fig.1 - Typical Output Characteristics**



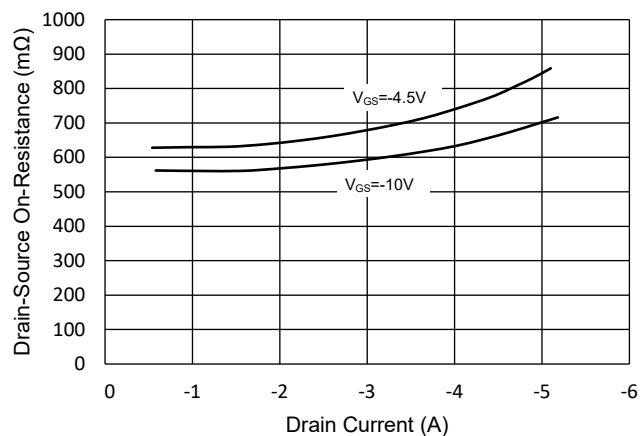
**Fig.2 - Transfer Characteristic**



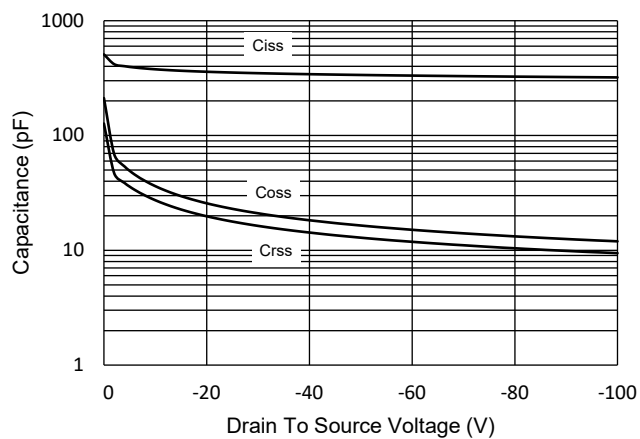
**Fig.3 -  $R_{DS(ON)}$  -  $V_{GS}$**



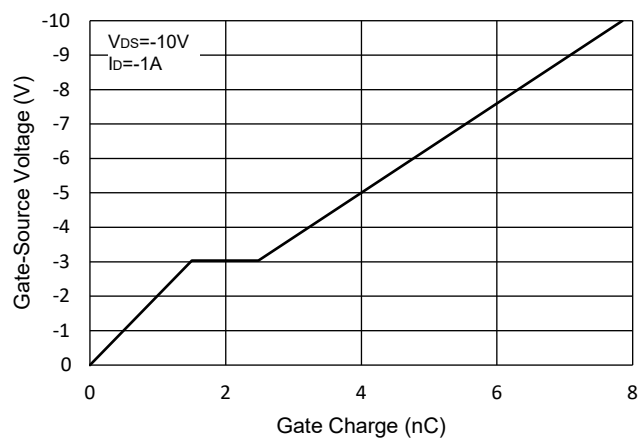
**Fig.4 -  $R_{DS(ON)}$  -  $I_D$**



**Fig.5 - Capacitance Characteristics**

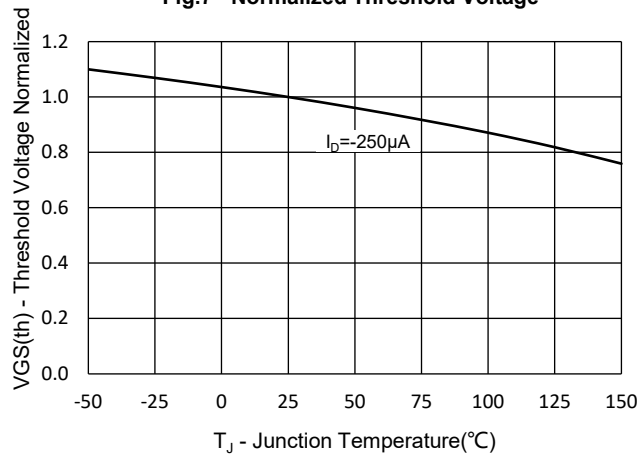


**Fig.6 - Gate Charge**

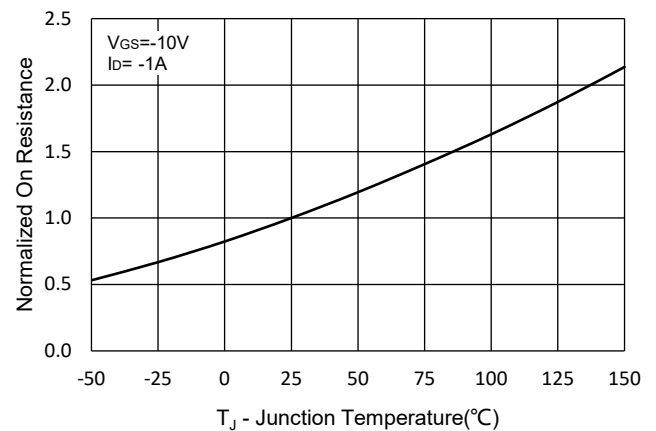


## Curve Characteristics

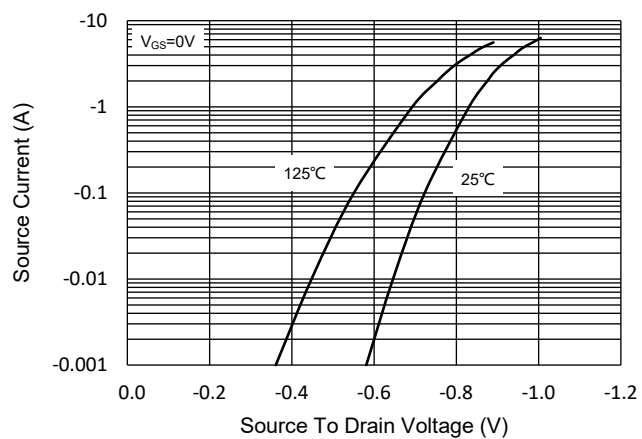
**Fig.7 - Normalized Threshold Voltage**



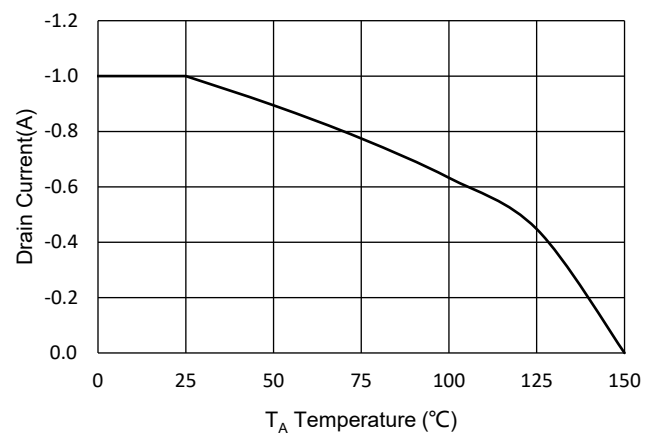
**Fig.8 - Normalized On Resistance Characteristics**



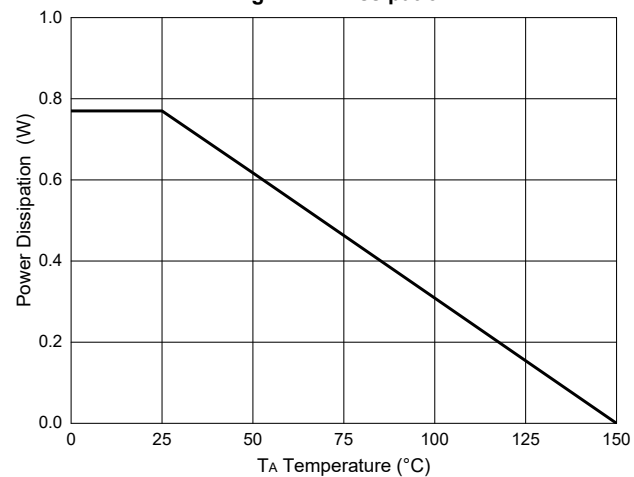
**Fig.9 -  $I_S$  -  $V_{SD}$**



**Fig.10 - Drain Current**

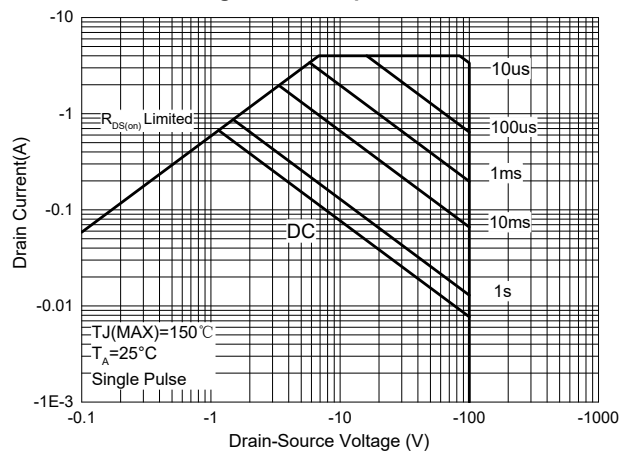


**Fig.11-PD Dissipation**

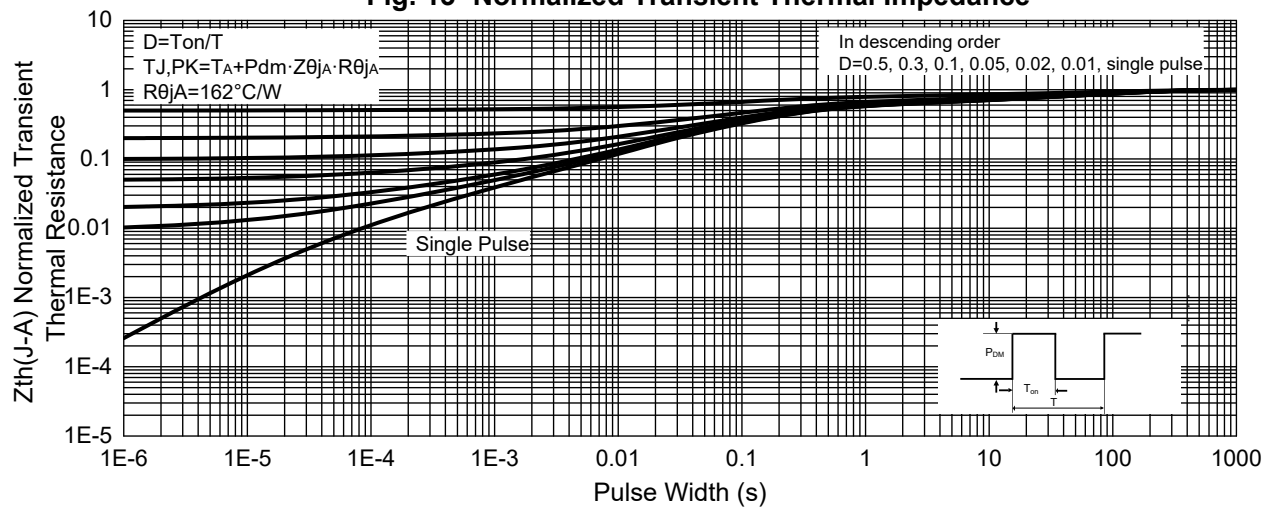


## Curve Characteristics

**Fig. 12 - Safe Operation Area**



**Fig. 13 - Normalized Transient Thermal Impedance**



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel
Part Number-13P	Tape&Reel: 10Kpcs/Reel

For packaging details, go to our website at <https://www.mccsemi.com/pdf/productpackaging/SOT-23%20Package.pdf>

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