

### Features

- Operated at Low Logic Level Gate Drive
- P-Channel Switch with Low  $R_{DS(on)}$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

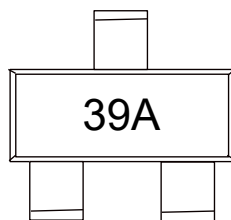
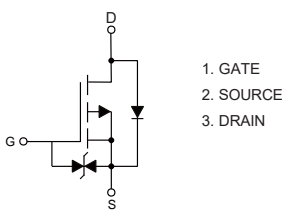
### Maximum Ratings

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Maximum Thermal Resistance: 833°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	±12	V
Drain Current-Continuous	$I_D$	-0.6	A
Pulsed Drain Current <sup>(Note 2)</sup>	$I_{DM}$	-3	A
Power Dissipation <sup>(Note 3)</sup>	$P_D$	0.15	W

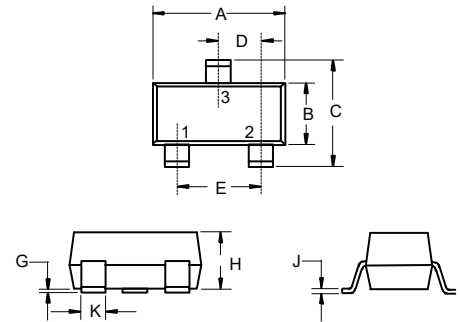
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

### Internal Structure and Marking Code



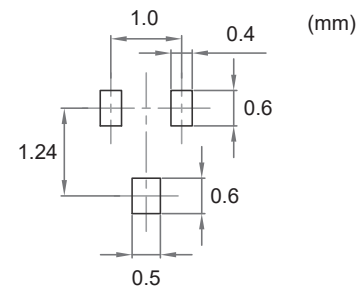
## P-Channel MOSFET

### SOT-523



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.059	0.067	1.50	1.70	
B	0.030	0.033	0.75	0.85	
C	0.057	0.069	1.45	1.75	
D	0.020		0.50		TYP.
E	0.035	0.043	0.90	1.10	
G	0.000	0.004	0.00	0.10	
H	0.024	0.031	0.60	0.80	
J	0.004	0.008	0.10	0.20	
K	0.006	0.014	0.15	0.35	

### Suggested Solder Pad Layout



**ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20			V
Gate-Threshold Voltage <sup>(Note 4)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.35	-0.64	-1.1	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-20V, V_{GS}=0V$			-1.0	$\mu A$
Gate-body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 10V, V_{DS}=0V$			$\pm 10$	$\mu A$
Drain-Source On-Resistance <sup>(Note 4)</sup>	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-500mA$		0.62	0.85	$\Omega$
		$V_{GS}=-2.5V, I_D=-300mA$		0.89	1.2	
		$V_{GS}=-1.8V, I_D=-200mA$		1.35	2.0	
Forward transconductance	$g_{FS}$	$V_{DS}=-10V, I_D=-500mA$	0.8			S
Diode Forward Voltage <sup>(Note 4)</sup>	$V_{SD}$	$V_{GS}=0V, I_S=-500mA$			-1.2	V
<b>Dynamic Characteristics<sup>(Note 5)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-16V, V_{GS}=0V, f=1MHz$		40		pF
Output Capacitance	$C_{oss}$			16		
Reverse Transfer Capacitance	$C_{rss}$			11		
Total Gate Charge	$Q_g$	$V_{GS}=-4.5V, V_{DS}=-10V, I_D=-1A$		860		pC
Gate-Source Charge	$Q_{gs}$			320		
Gate-Drain Charge	$Q_{gd}$			200		
<b>Switching Characteristics<sup>(Note 5)</sup></b>						
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-500mA, R_G=10\Omega$		3.8		ns
Turn-off Delay Time	$t_{d(off)}$			9.4		
Rise Time	$t_r$			19		
Fall Time	$t_f$			23		

**Notes :**

2. Repetitive Rating : Pulse Width Limited by Junction Temperature.
3. This Test is Performed With No Heat Sink at Ta=25°C.
4. Pulse Test : Pulse Width $\leq 300\mu s$ , Duty Cycle $\leq 0.5\%$ .
5. Guaranteed by Design, Not Subject to Production Testing.

Curve Characteristics

Fig. 1 - Typical Output Characteristics

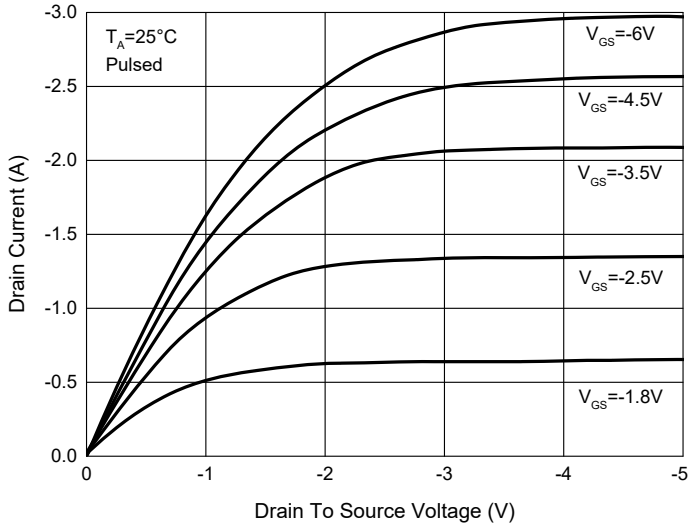


Fig. 2 - Transfer Characteristics

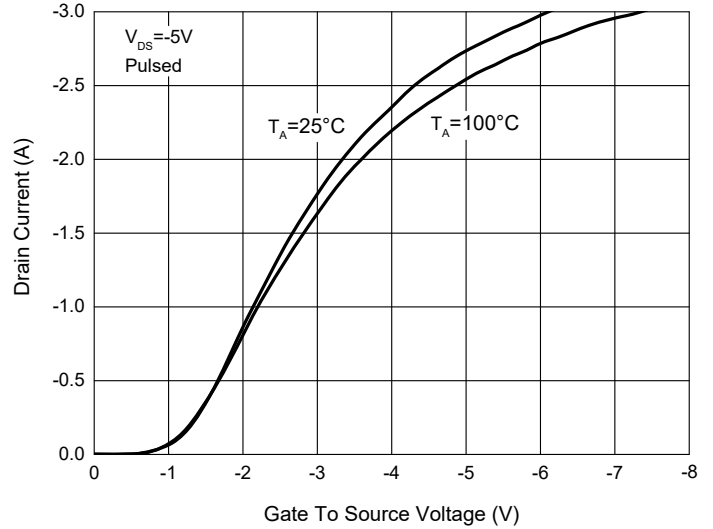


Fig. 3 -  $R_{DS(ON)} - I_D$

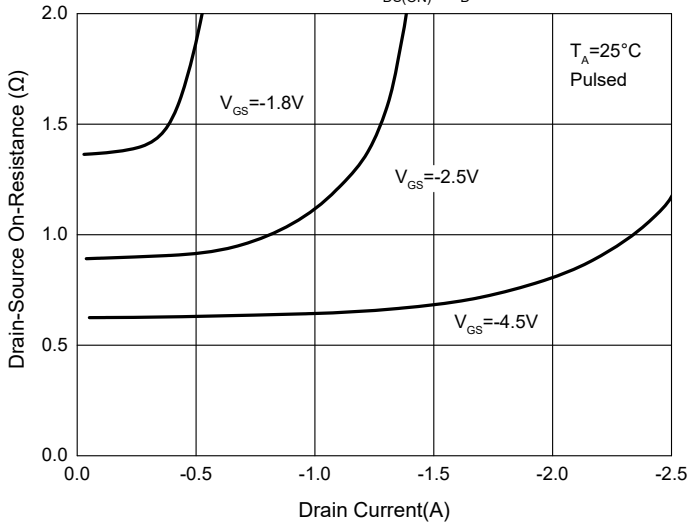


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

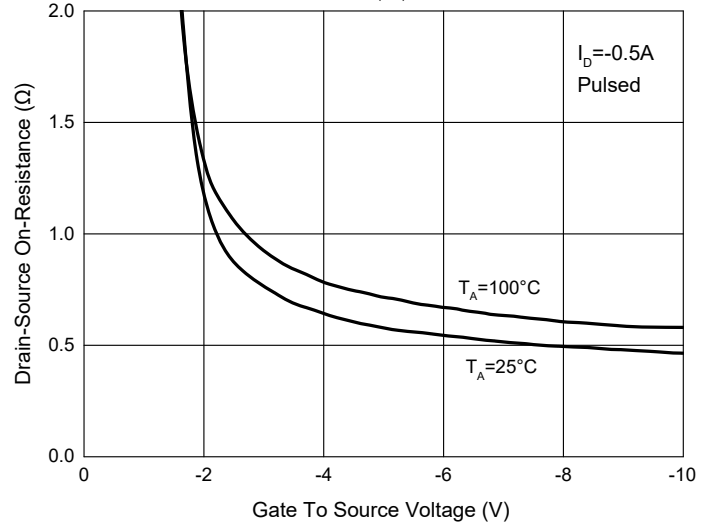


Fig. 5 -  $I_S - V_{SD}$

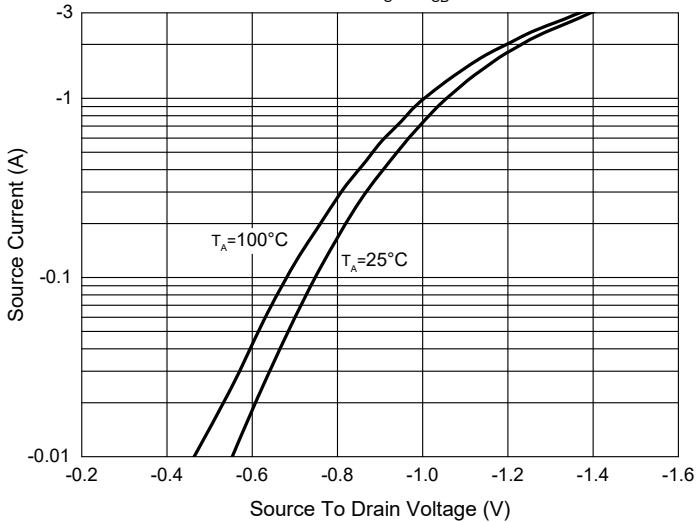
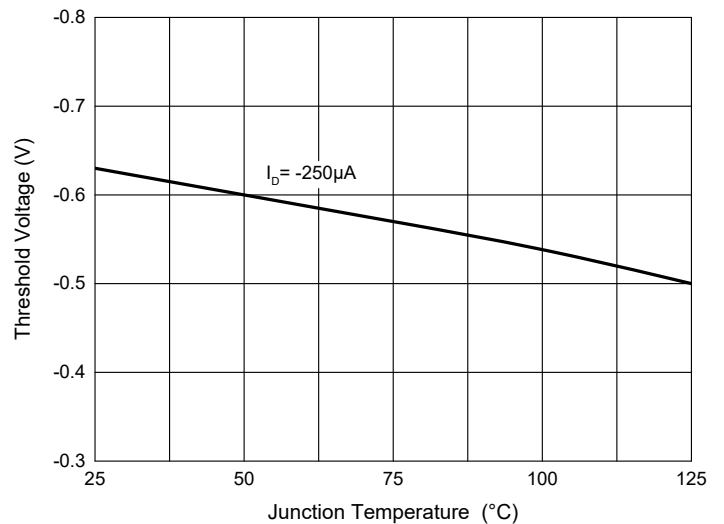


Fig. 6 - Threshold Voltage



Curve Characteristics

Fig. 7 - Capacitance Characteristics

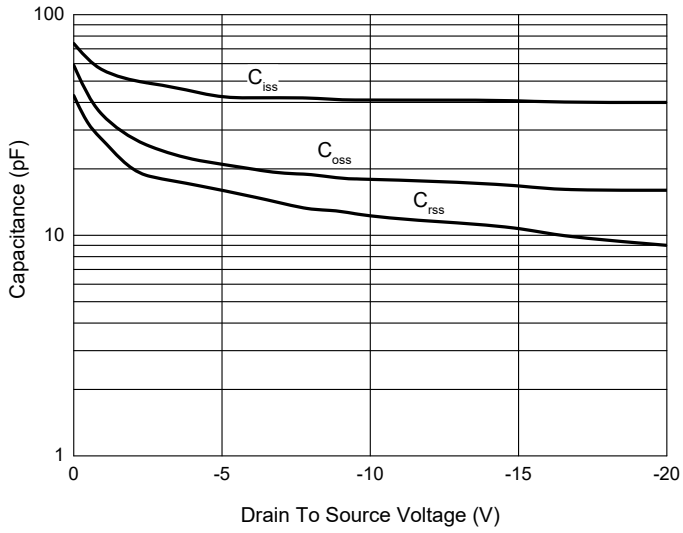
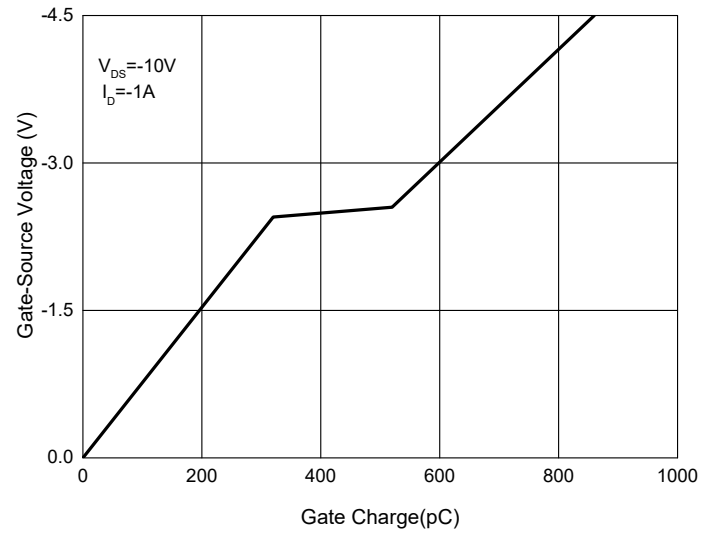


Fig. 8 - Gate Charge



## Ordering Information

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

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