

## Features

- High Dense Cell Design for Extremely Low  $R_{DS(ON)}$
- Exceptional On-Resistance and Maximum DC Current Capability
- 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)

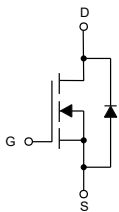
## Maximum Ratings

- Operating Junction Temperature Range:  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Storage Temperature Range:  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Thermal Resistance:  $96^{\circ}\text{C/W}$  Junction to Ambient (Note 3)

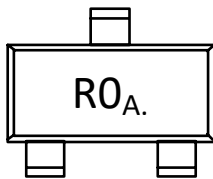
Parameter	Symbol	Rating	Unit
Drain -Source Voltage	$V_{DS}$	30	V
Gate -Source Voltage	$V_{GS}$	$\pm 12$	V
Drain Current-Continuous	$I_D$	5.8	A
Drain Current-Pulsed (Note 2)	$I_{DM}$	30	A
Power Dissipation	$P_D$	1.3	W

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

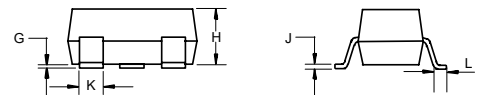
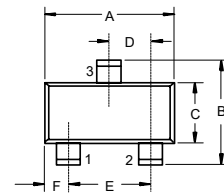


1. GATE
2. SOURCE
3. DRAIN



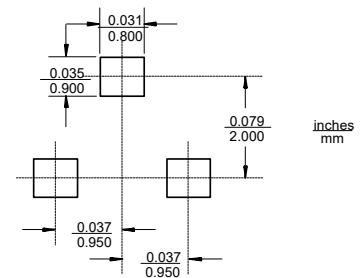
# N-Channel MOSFET

## SOT-23



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

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate-Threshold Voltage <sup>(Note 4)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.7		1.2	V
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 12V, V_{DS}=0V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=24V, V_{GS}=0V$			1	$\mu A$
Drain-Source On-Resistance <sup>(Note 4)</sup>	$R_{DS(on)}$	$V_{GS}=10V, I_D=5.8A$		21	27	m $\Omega$
		$V_{GS}=4.5V, I_D=5.0A$		25	33	
		$V_{GS}=2.5V, I_D=4.0A$		33	51	
Forward Transconductance	$g_{FS}$	$V_{DS}=5V, I_D=5.0A$	8.0			S
<b>Dynamic Characteristics<sup>(Note 5)</sup></b>						
Total Gate Charge	$Q_g$	$V_{GS}=10V, V_{DS}=15V, I_D=5.6A$		17.25		nC
Gate-Source Charge	$Q_{gs}$			2.1		
Gate-Drain Charge	$Q_{gd}$			2		
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, f=1MHz$			1155	pF
Output Capacitance	$C_{oss}$			108		
Reverse Transfer Capacitance	$C_{rss}$			84		
Gate Resistance	$R_g$	$V_{DS}=0V, V_{GS}=0V, f=1MHz$			3.6	$\Omega$
<b>Switching Characteristics<sup>(Note 5)</sup></b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, R_L=2.7\Omega, V_{DS}=15V, R_{GEN}=3\Omega$			5	ns
Turn-On Rise Time	$t_r$				7	
Turn-Off Delay Time	$t_{d(off)}$				40	
Turn-Off Fall Time	$t_f$				6	
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Diode Forward voltage <sup>(Note 4)</sup>	$V_{SD}$	$V_{GS}=0V, I_S=1A$			1.0	V

Notes:

2. Repetitive Rating : Pulse width limited by maximum junction temperature.
3. Surface Mounted on FR4 Board,  $t < 5$  sec.
4. Pulse Test: Pulse Width $\leq 300\mu A$ , Duty Cycle $\leq 2\%$ .
5. Guaranteed by Design, Not Subject to Production Testing.

## Curve Characteristics

Fig. 1 - Output Characteristics

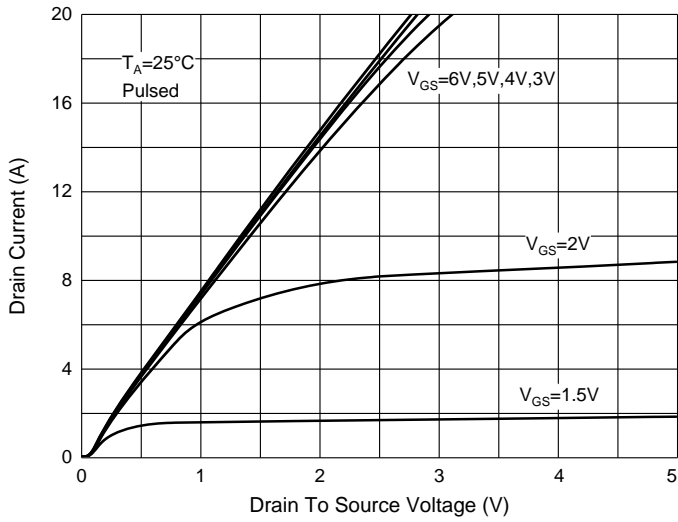


Fig. 2 - Transfer Characteristics

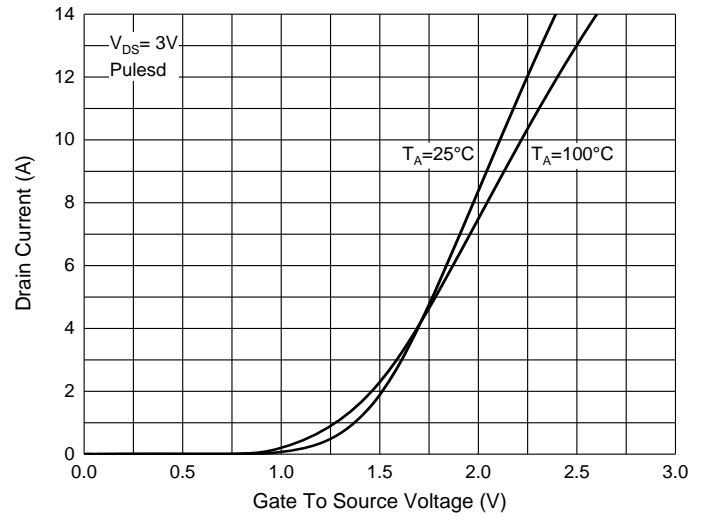


Fig. 3 -  $R_{DS(ON)} - I_D$

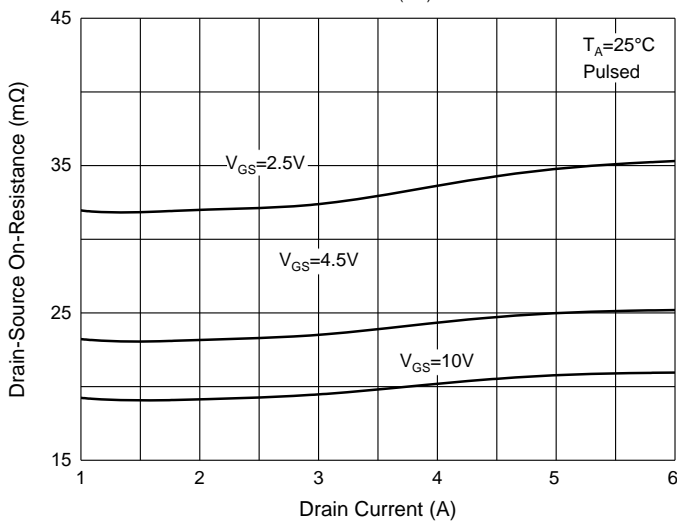


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

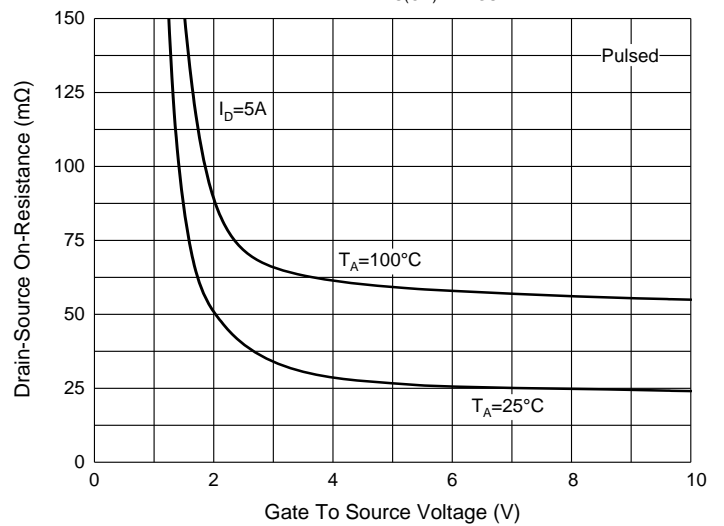


Fig. 5 -  $I_S - V_{SD}$

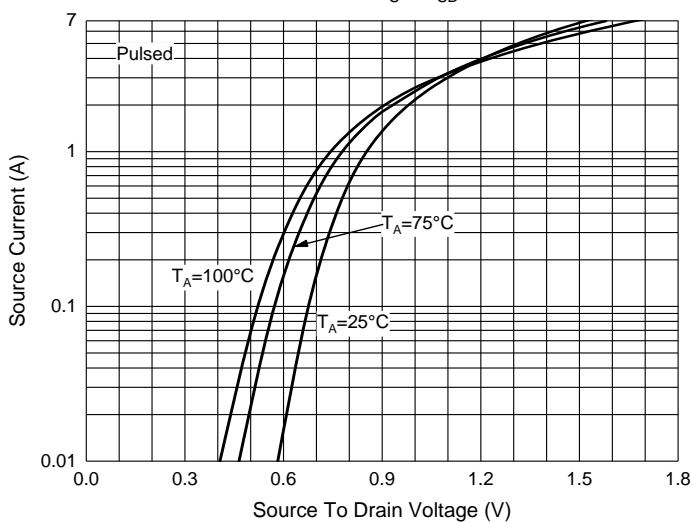
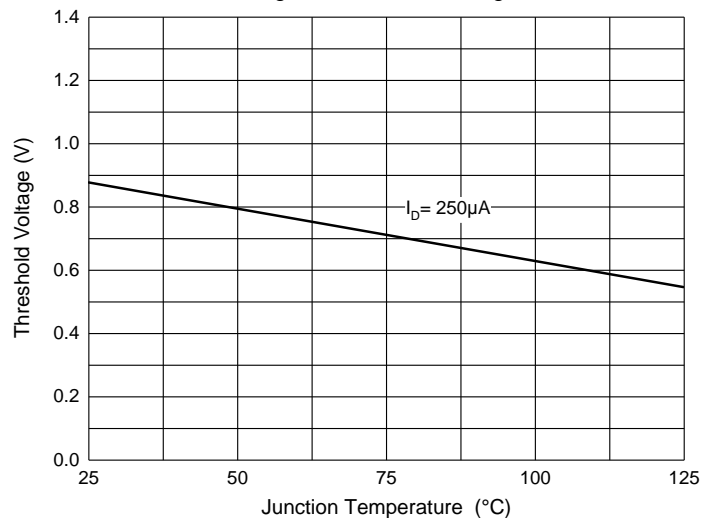


Fig. 6 - Threshold Voltage



## Ordering Information

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

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