

**Features**

- Low  $R_{DS(ON)}$
- Rugged and Reliable
- ESD Protected Gate
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)

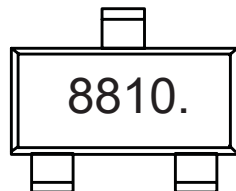
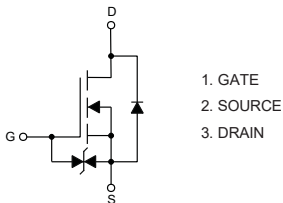
**Maximum Ratings**

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 96°C/W Junction to Ambient (Note 2)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	±12	V
Drain Current	$I_D$	7.0	A
Pulsed Drain Current (Note 2)	$I_{DM}$	30	A
Total Power Dissipation	$P_D$	1.3	W

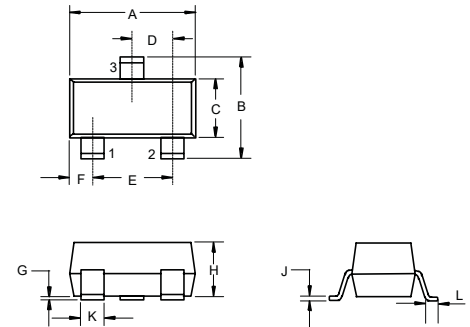
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

**Internal Structure and Marking Code**



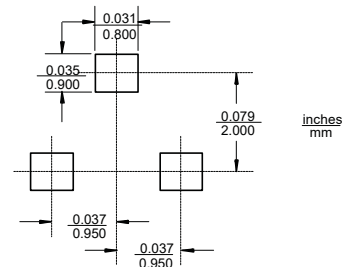
**N-Channel MOSFET**

**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 @ 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 2)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4		0.9	V
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS} = \pm 4.5V, V_{DS} = 0V$			$\pm 1$	$\mu A$
		$V_{GS} = \pm 8V, V_{DS} = 0V$			$\pm 10$	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 16V, V_{GS} = 0V$			1	$\mu A$
Drain-Source On-Resistance <sup>(Note 2)</sup>	$R_{DS(on)}$	$V_{GS}=10V, I_D=7A$			20	m $\Omega$
		$V_{GS}=4.5V, I_D=6.6A$			22	
		$V_{GS}=3.8V, I_D=6A$			24	
		$V_{GS}=2.5V, I_D=5.5A$			26	
		$V_{GS}=1.8V, I_D=5A$			39	
Forward Transconductance <sup>(Note 2)</sup>	gfs	$V_{DS}=5V, I_D=7A$	9			S
Diode Forward Voltage <sup>(Note 2)</sup>	$V_{SD}$	$V_{GS}=0V, I_S=1A$			1	V
<b>Dynamic Characteristics<sup>(Note 3)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=10V, V_{GS}=0V, f=1MHz$		890		$\mu F$
Output Capacitance	$C_{oss}$			133		
Reverse Transfer Capacitance	$C_{rss}$			120		
<b>Switching Characteristics<sup>(Note 3)</sup></b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V, V_{GS}=5V, R_L=1.5\Omega, R_{GEN}=3\Omega$		7		ns
Turn-On Rise Time	$t_r$			45		
Turn-Off Delay Time	$t_{d(off)}$			30		
Turn-Off Fall Time	$t_f$			52		
Total Gate Charge	Qg	$V_{DS}=10V, V_{GS}=4.5V, I_D=7A$		11		nC
Gate-Source Charge	Qgs			1.73		
Gate-Drain Charge	Qgd			3.1		

Note:

 2. Pulse Test: Pulse Width=300 $\mu s$ , Duty Cycle $\leq 2\%$ .

3. Guaranteed by Design, Not Subject to Production Testing

Curve Characteristics

Fig. 1 - Output Characteristics

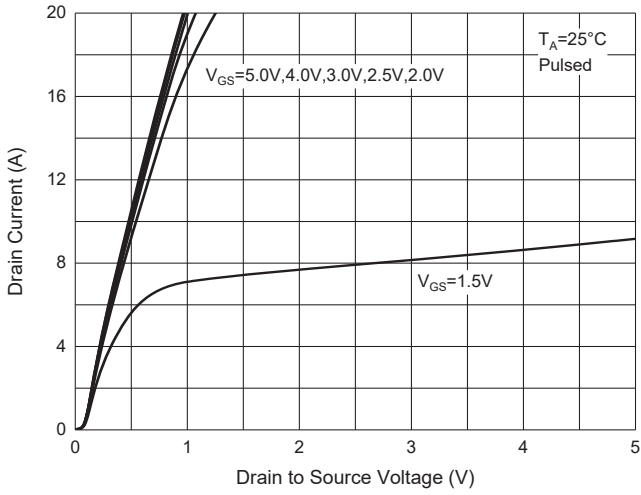


Fig. 2 - Transfer Characteristics

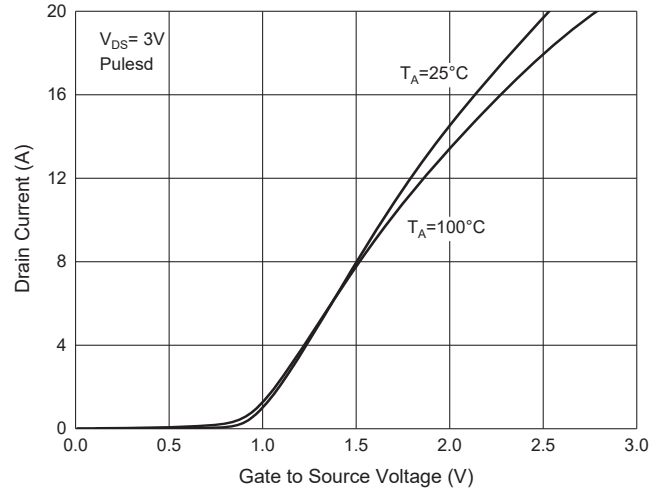


Fig. 3 -  $R_{DS(ON)} - I_D$

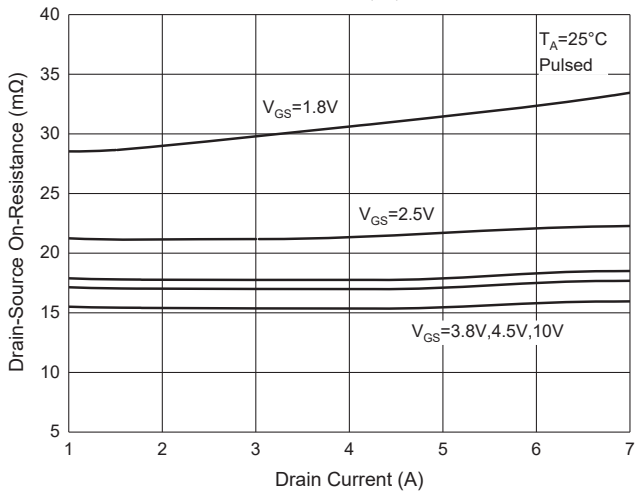


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

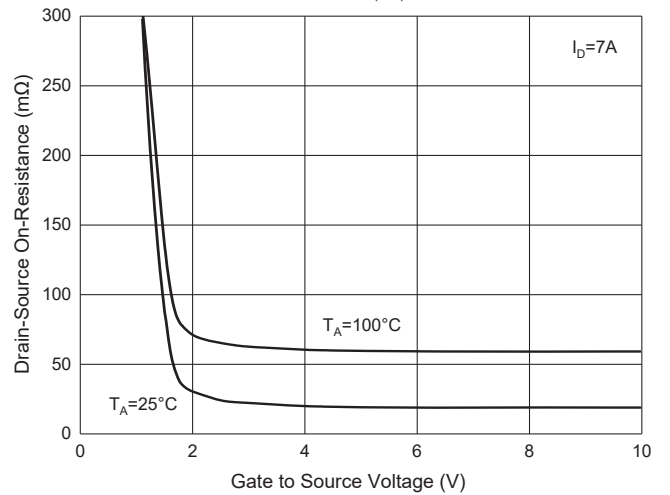


Fig. 5 -  $I_S - V_{SD}$

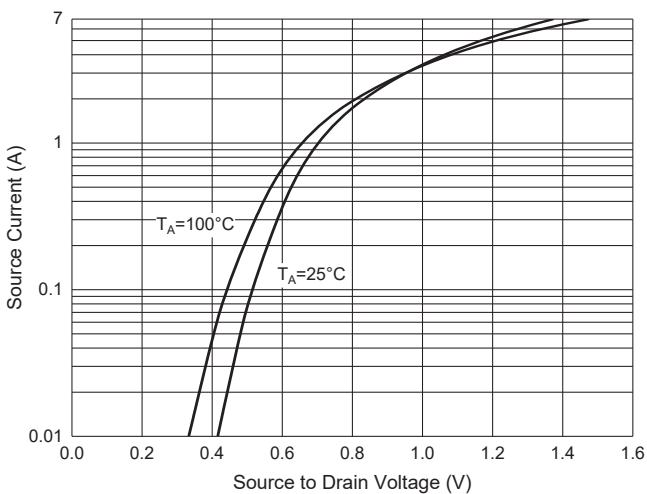
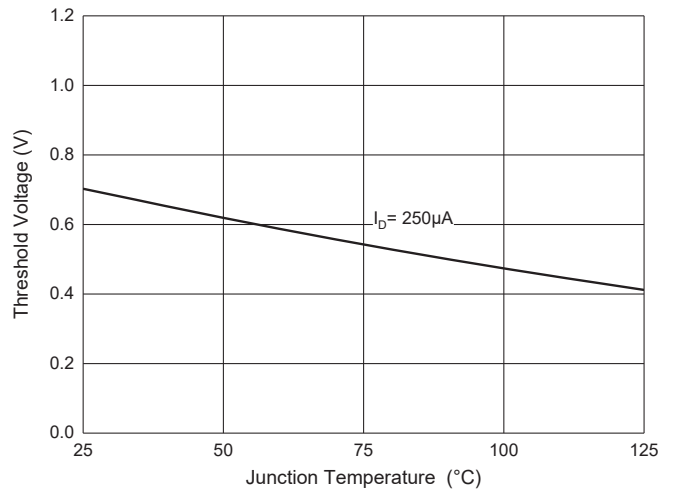


Fig. 6 - Threshold Voltage



## Ordering Information

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

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