

Features

- High Dense Cell Design for Extremely Low $R_{DS(ON)}$
- Rugged and Reliable
- High Speed Switching
- 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)

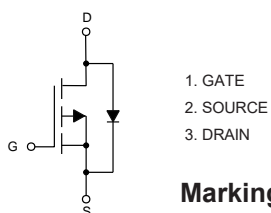
Maximum Ratings

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 357°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	-2.9	A
Pulsed Drain Current	I_{DM}	-12	A
Total Power Dissipation	P_D	0.35	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.

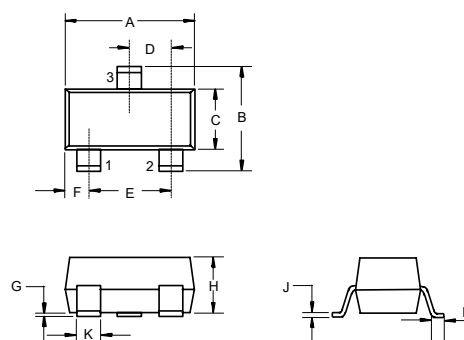
Internal Structure



Marking: S21 K

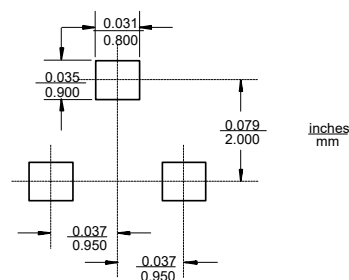
P-CHANNEL MOSFET

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	0.014	0.020	0.35	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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-10\mu A$	-20			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 12V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-16V, V_{GS}=0V$			-1	μA
Gate-Threshold Voltage ^(Note 2)	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4		-0.9	V
Drain-Source On-Resistance ^(Note 2)	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-3.3A$			57	m Ω
		$V_{GS}=-2.5V, I_D=-2.8A$			76	
		$V_{GS}=-1.8V, I_D=-2.3A$			110	
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-1.6A$			-1.2	V
Forward Transconductance	g_{FS}	$V_{DS}=-5V, I_D=-3.3A$	3			S
Dynamic Characteristics^(Note 3)						
Input Capacitance	C_{iss}	$V_{DS}=-6V, V_{GS}=0V, f=1MHz$		715		pF
Output Capacitance	C_{oss}			170		
Reverse Transfer Capacitance	C_{rss}			120		
Total Gate Charge	Q_g	$V_{DS}=-6V, V_{GS}=-4.5V, I_D=-3.3A$			13	nC
Gate-Source Charge	Q_{gs}			1.2		
Gate-Drain Charge	Q_{gd}			2.2		
Turn-On Delay Time	$t_{d(on)}$	$V_{GEN}=-4.5V, V_{DD}=-6V, I_D=-1.0A, R_G=6\Omega, R_L=6\Omega$			25	ns
Turn-On Rise Time	t_r				55	
Turn-Off Delay Time	$t_{d(off)}$				90	
Turn-Off Fall Time	t_f				60	

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

3. Guaranteed by Design, Not Subject to Production Testing.

Curve Characteristics

Fig. 1 - Output Characteristics

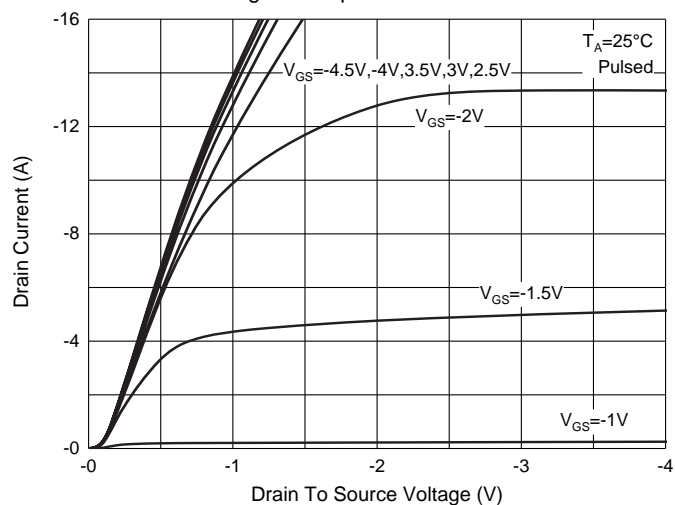


Fig. 2 - Transfer Characteristics

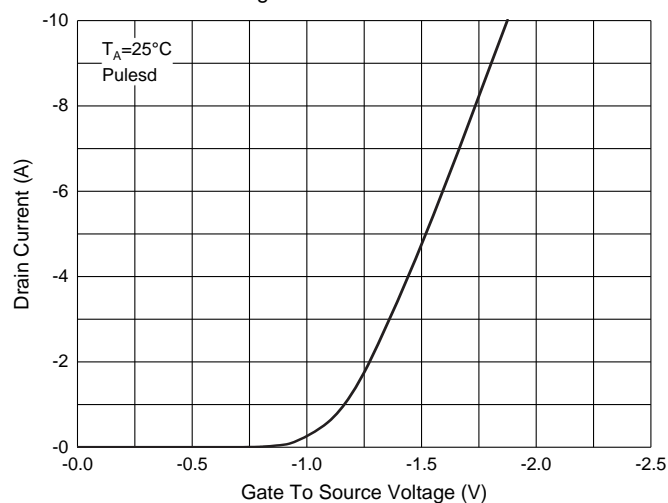


Fig. 3 - $R_{DS(ON)} - I_D$

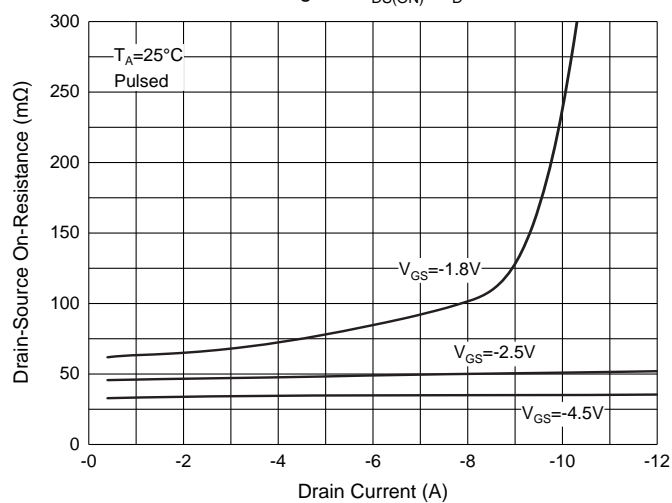


Fig. 4 - $R_{DS(ON)} - V_{GS}$

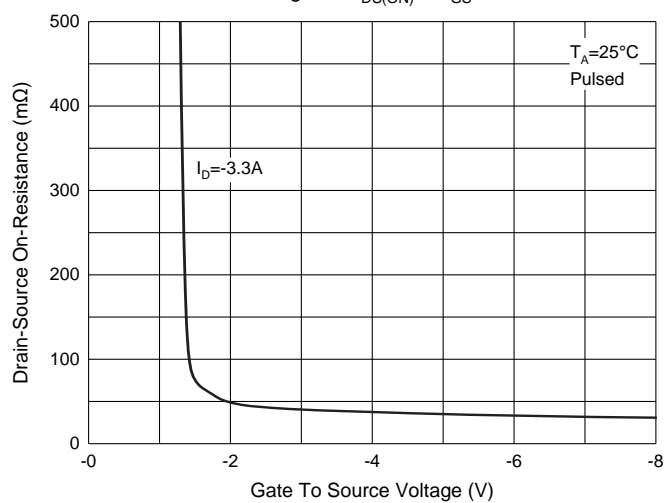
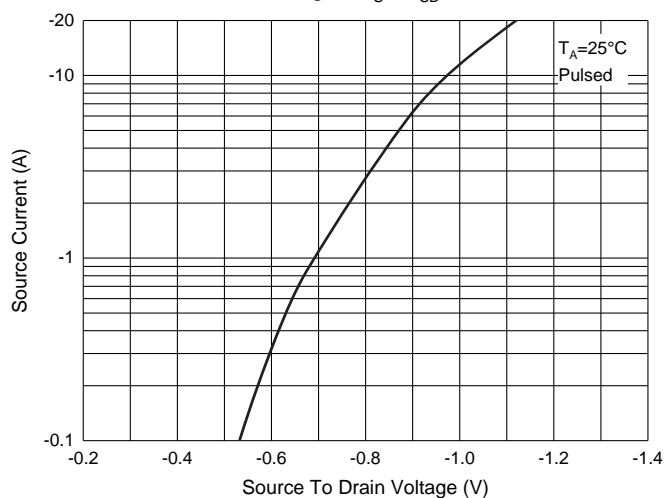


Fig. 5 - $I_S - V_{SD}$



Ordering Information

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

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