

### Features

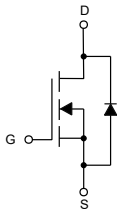
- TrenchFET Power MOSFET
- Low  $R_{DS(ON)}$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

### 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:  $357^{\circ}\text{C/W}$  Junction to Ambient

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous	$I_D$	2.0	A
Drain Current-Pulsed <sup>(Note 1)</sup>	$I_{DM}$	8.0	A

### Internal Structure

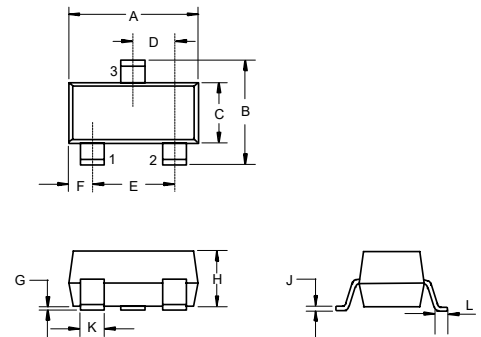


1. GATE
2. SOURCE
3. DRAIN

**Marking: S24**

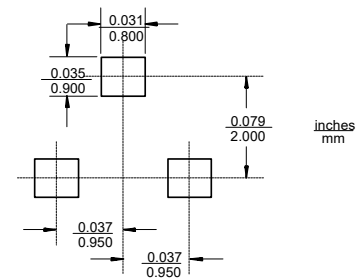
## N-Channel MOSFET

### SOT-23



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			V
Gate-Threshold Voltage <sup>(Note 2)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2		2.8	V
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$			1	$\mu A$
Drain-Source On-Resistance <sup>(Note2)</sup>	$R_{DS(on)}$	$V_{GS}=10V, I_D=1.5A$			234	m $\Omega$
		$V_{GS}=6.0V, I_D=1.0A$			267	
		$V_{GS}=4.5V, I_D=0.5A$			278	
Forward Transconductance <sup>(Note2)</sup>	$g_{FS}$	$V_{DS}=20V, I_D=1.5A$		2.0		S
Diode Forward voltage	$V_{SD}$	$V_{GS}=0V, I_S=1.3A$			1.2	V
<b>Dynamic Characteristics<sup>(Note 3)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=50V, V_{GS}=0V, f=1MHz$		190		pF
Output Capacitance	$C_{oss}$			22		
Reverse Transfer Capacitance	$C_{rss}$			13		
Gate Resistance	$R_g$	$f=1MHz$	0.3		2.8	$\Omega$
<b>Switching Characteristics<sup>(Note 3)</sup></b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=50V, R_L=39\Omega, V_{GEN}=4.5V, I_D=1.3A, R_{GEN}=1\Omega$			45	ns
Turn-On Rise Time	$t_r$				39	
Turn-Off Delay Time	$t_{d(off)}$				26	
Turn-Off Fall Time	$t_f$				20	
Total Gate Charge	$Q_g$	$V_{DS}=50V, V_{GS}=4.5V, I_D=1.6A$			5.8	nC
Gate-Source Charge	$Q_{gs}$			0.75		
Turn-Off Fall Time	$Q_{gd}$			1.4		

Notes:

- 1.Repetitive Rating: Pluse Width Limited By Junction Temperature.
- 2.Pulse Test: Pulse Width $\leq 300\mu A$ , Duty Cycle $\leq 0.5\%$ .
- 3.Guaranteed By Design, Not Subject to Production Testing.

Curve Characteristics

Fig. 1 - Output Characteristics

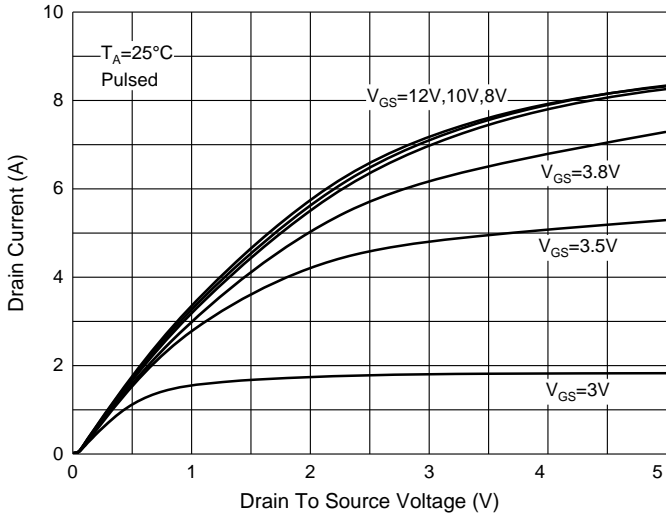


Fig. 2 - Transfer Characteristics

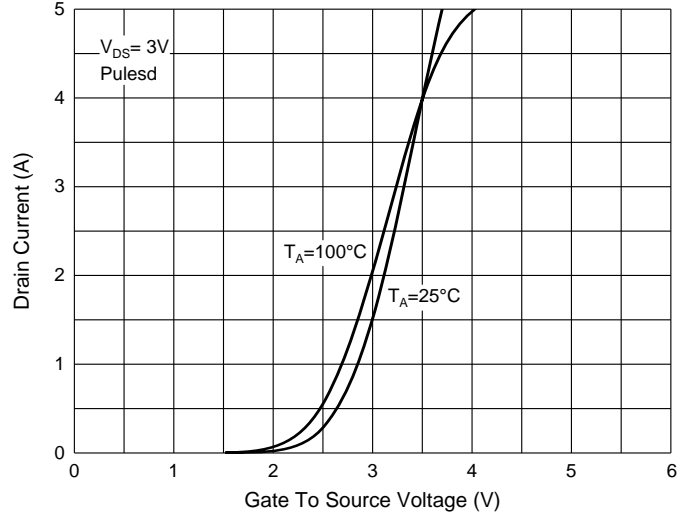


Fig. 3 -  $R_{DS(ON)} - I_D$

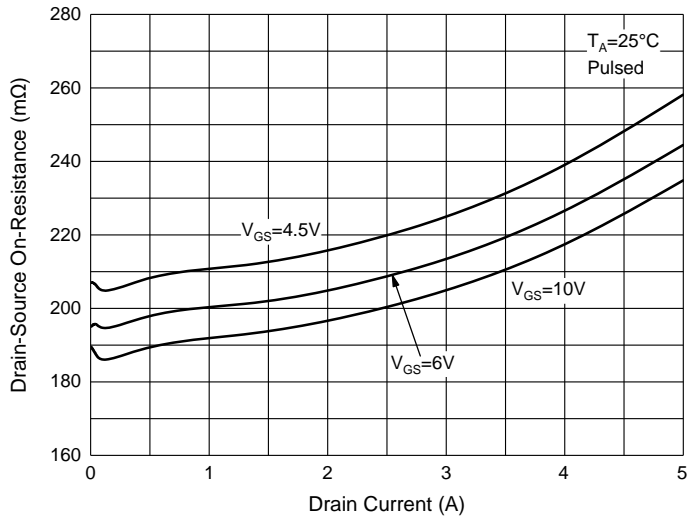


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

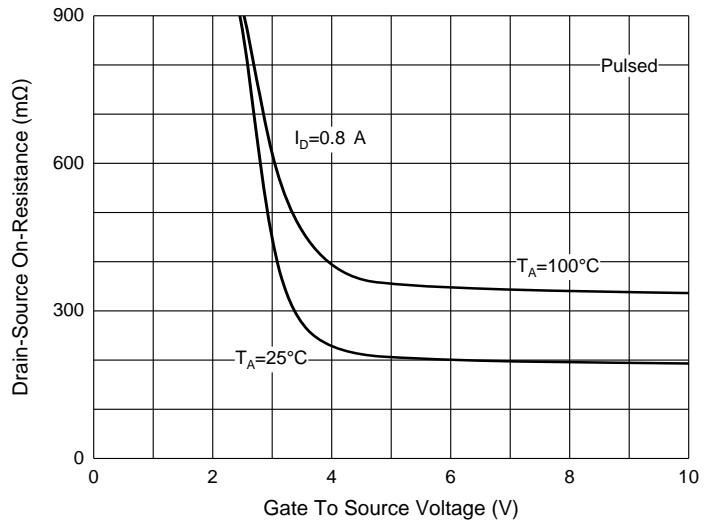


Fig. 5 -  $I_S - V_{SD}$

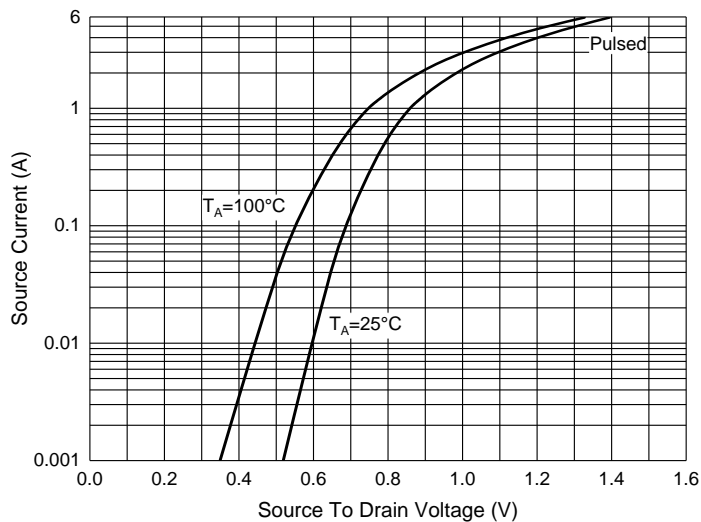
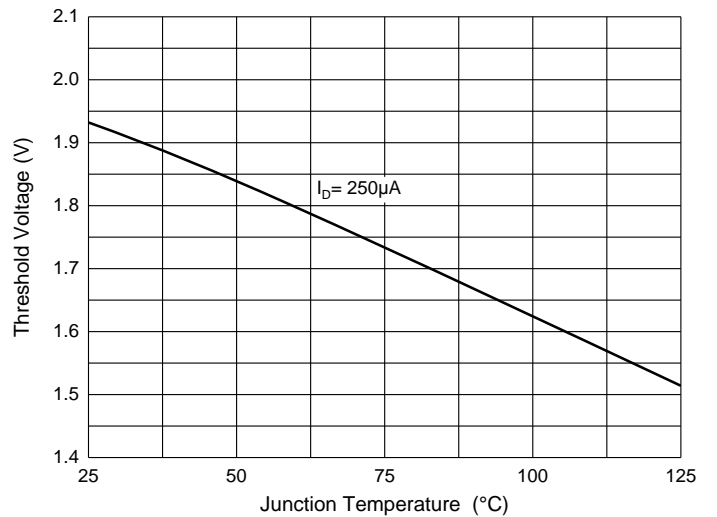


Fig. 6 - Threshold Voltage



## Ordering Information

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

Note : Adding "-HF" Suffix For Halogen Free, eg. Part Number-TP-HF

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#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.