

## Features

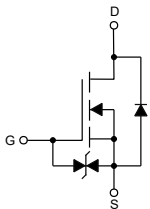
- High Density Cell Design for Low  $R_{DS(ON)}$
- Voltage Controlled Small Signal Switch
- ESD Protected up to 2KV (HBM)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Maximum Ratings

- Operating Junction Temperature Range:  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Storage Temperature:  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Thermal Resistance:  $357^{\circ}\text{C/W}$  Junction to Ambient

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous	$I_D$	0.34	A
Power Dissipation	$P_D$	0.35	W

## Internal Structure

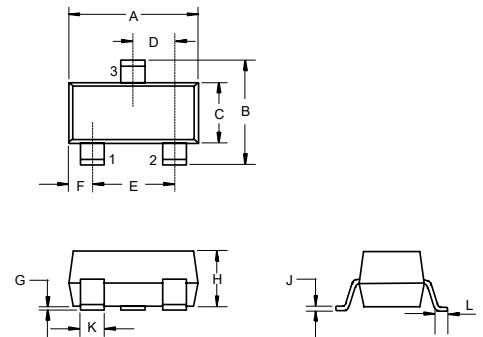


1. GATE
2. SOURCE
3. DRAIN

Marking: 72K.

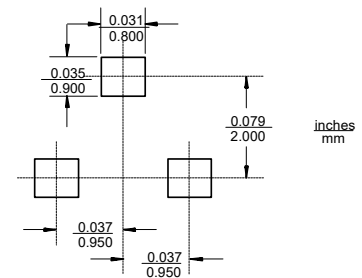
# N-Channel MOSFET

## 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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate-Threshold Voltage <sup>(1)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.4	2.5	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=48V, V_{GS}=0V$			1.0	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 10$	$\mu A$
		$V_{GS}=\pm 10V, V_{DS}=0V$			$\pm 200$	nA
		$V_{GS}=\pm 5V, V_{DS}=0V$			$\pm 100$	nA
Drain-Source On-Resistance <sup>(1)</sup>	$R_{DS(on)}$	$V_{GS}=10V, I_D=500mA$			5.0	$\Omega$
		$V_{GS}=4.5V, I_D=200mA$			5.3	
Recovered Charge	$Q_r$	$V_{GS}=0V, I_S=300mA, V_R=25V$ $di/dt=-100A/\mu s$		30		nC
<b>Dynamic Characteristics</b>						
Input Capacitance <sup>(2)</sup>	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		35		pF
Output Capacitance <sup>(2)</sup>	$C_{oss}$			13		
Reverse Transfer Capacitance <sup>(2)</sup>	$C_{rss}$			8		
<b>Switching Characteristics</b>						
Turn-on Delay Time <sup>(2)</sup>	$t_{d(on)}$	$V_{DD}=25V, V_{GS}=10V, R_L=250\Omega,$ $R_{GS}=50\Omega, R_{GEN}=25\Omega$			10	ns
Turn-off Delay Time <sup>(2)</sup>	$t_{d(off)}$				15	
Reverse Recovery Time	$t_{rr}$	$V_{GS}=0V, I_S=300mA, V_R=25V,$ $di/dt=-100A/\mu s$		30		
<b>Source-Drain Diode Characteristics</b>						
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=200mA$		0.82	1.3	V
<b>Gate-Source Zener Diode</b>						
Gate-Source Breakdown Voltage	$BV_{GSO}$	$I_{GS}=\pm 1mA, (Open\ Drain)$	$\pm 21.5$		$\pm 30$	V

Note: 1. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

2. These Parameters Have No Way to Verify.

Curve Characteristics

Fig. 1 - Output Characteristics

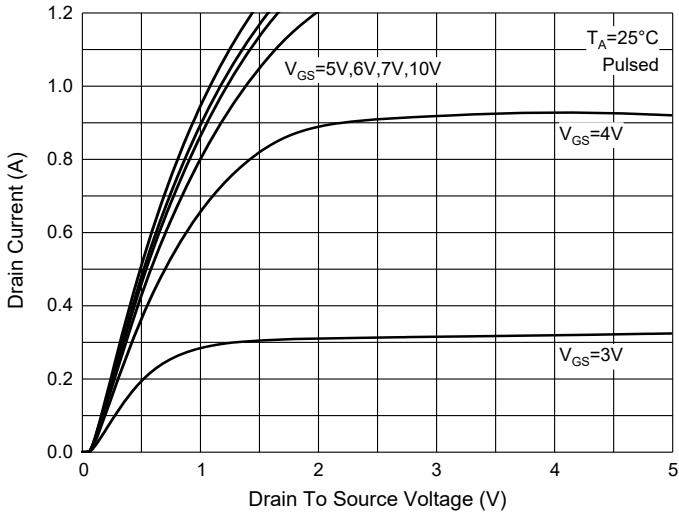


Fig. 2 - Transfer Characteristics

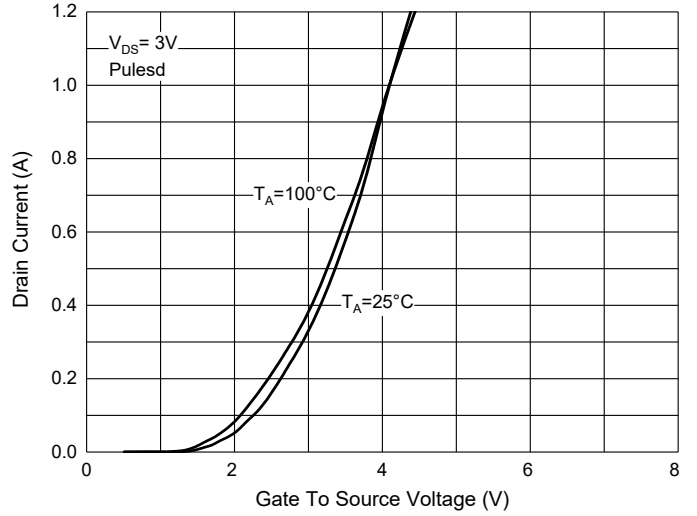


Fig. 3 -  $R_{DS(ON)} - I_D$

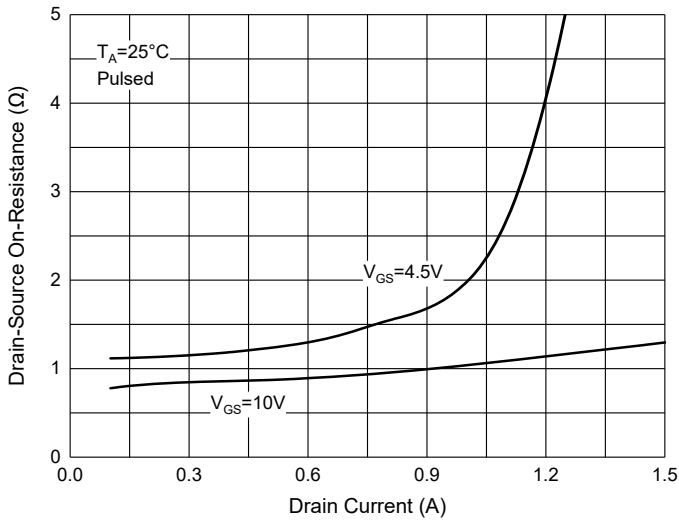


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

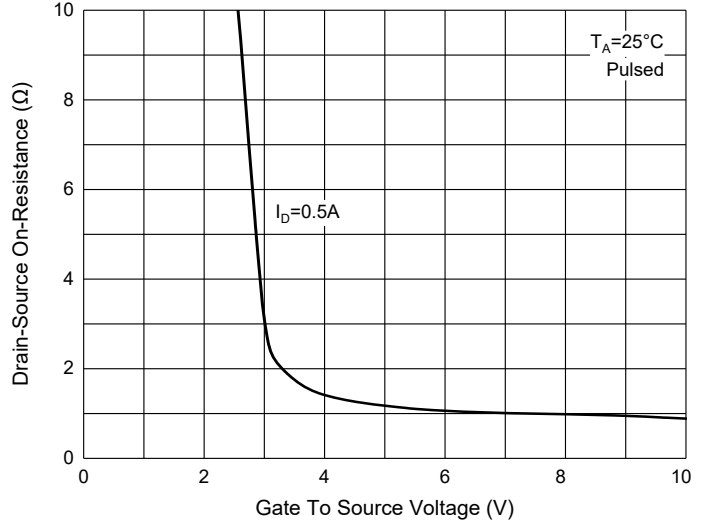


Fig. 5 -  $I_S - V_{SD}$

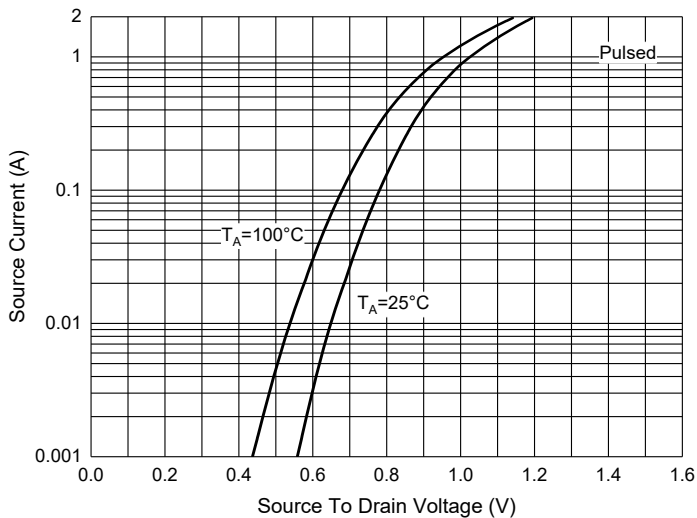
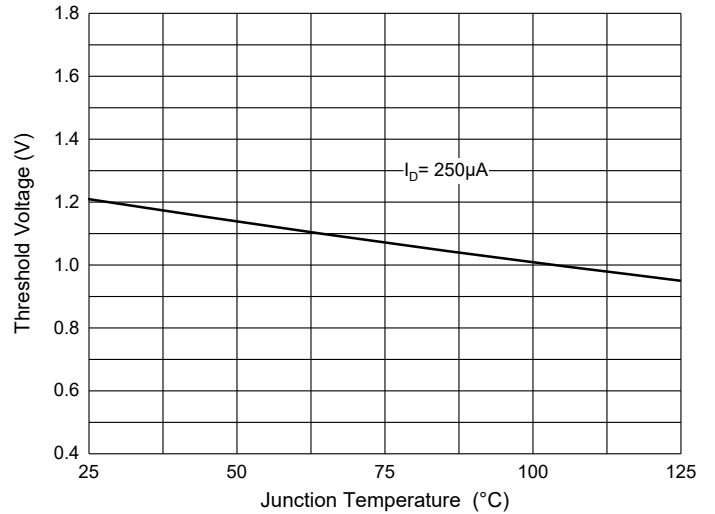
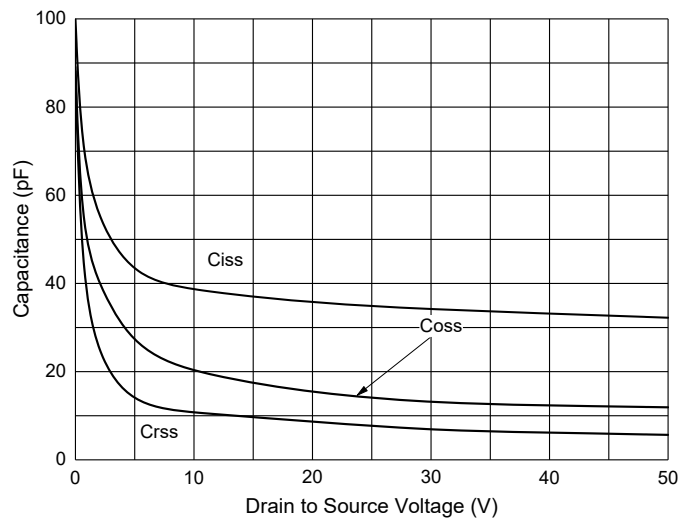


Fig. 6 - Threshold Voltage



## Curve Characteristics

Fig. 7 - Capacitance Characteristics



## 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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