

Features

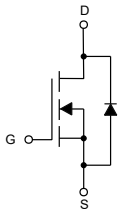
- Trench Power LV MOSFET Technology
- High Power and Current Handling Capability
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 104°C/W Junction to Ambient^(Note 1)

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	V_{DS}	40	V	
Gate-Source Voltage	V_{GS}	±20	V	
Drain Current-Continuous	I_D	$T_A=25^\circ\text{C}$ @ Steady State	5.0	A
		$T_A=70^\circ\text{C}$ @ Steady State	4.0	
Drain Current-Pulsed ^(Note 2)	I_{DM}	20	A	
Power Dissipation	P_D	1.2	W	

Internal Structure

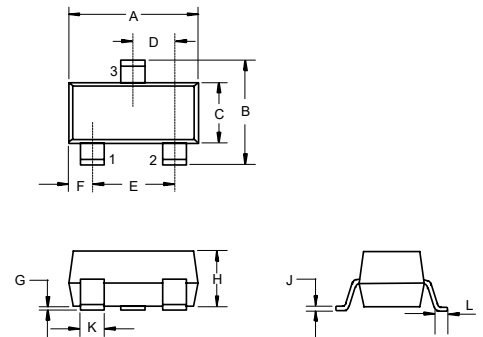


1. GATE
2. SOURCE
3. DRAIN

Marking Code: 4005.

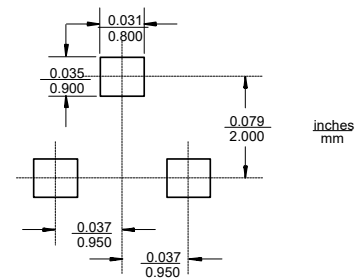
N-Channel MOSFET

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
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	40			V
Gate-Threshold Voltage ^(Note 3)	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.8	1.3	1.8	V
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
		$V_{GS} = \pm 10V, V_{DS} = 0V$			± 50	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 40V, V_{GS} = 0V, T_C = 25^\circ C$			1	μA
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=5A$		30	45	m Ω
		$V_{GS}=4.5V, I_D=3A$		40	60	
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=10A$			1.2	V
Maximum Body-Diode Continuous Current	I_S				5	A
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V, f=1MHz$		330		pF
Output Capacitance	C_{oss}			93		
Reverse Transfer Capacitance	C_{rss}			20		
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=20V, V_{GS}=10V, R_L=2\Omega, R_{GEN}=3\Omega$		13		ns
Turn-On Rise Time	t_r			52		
Turn-Off Delay Time	$t_{d(off)}$			17		
Turn-Off Fall Time	t_f			10		
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=20V, I_D=3.5A$		5.4		Nc
Gate-Source Charge	Q_{gs}			1.5		
Gate-Drain Charge	Q_{gd}			1.9		

Note:

1. Device Mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.
2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

Curve Characteristics

Fig. 1 - Output Characteristics

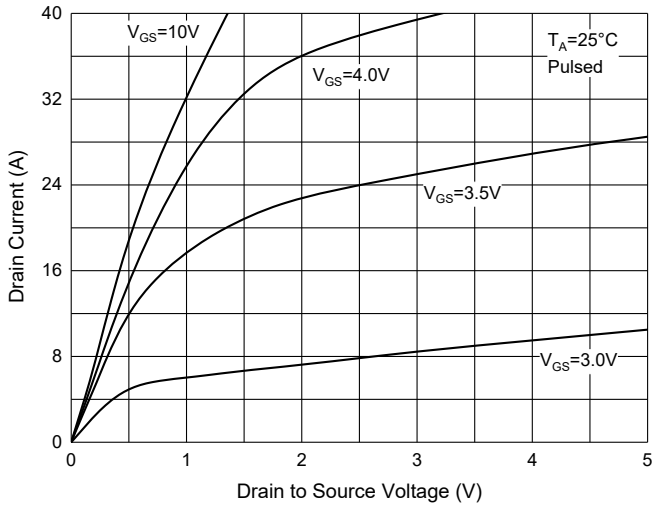


Fig. 2 - Transfer Characteristics

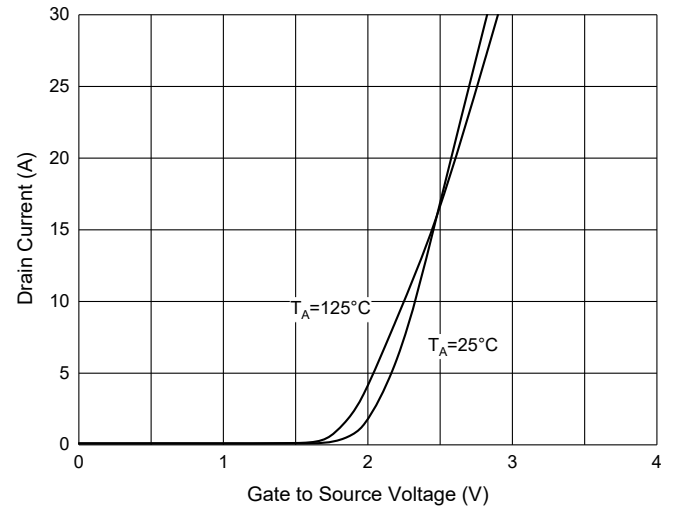


Fig. 3 - Capacitance Characteristics

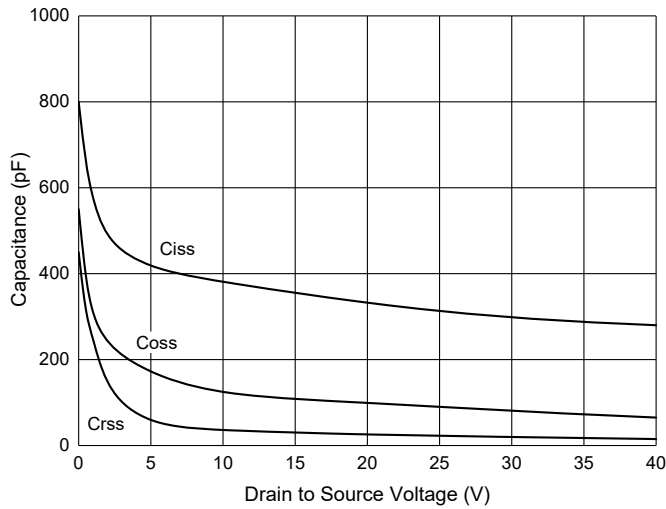


Fig. 4 - Gate Charge

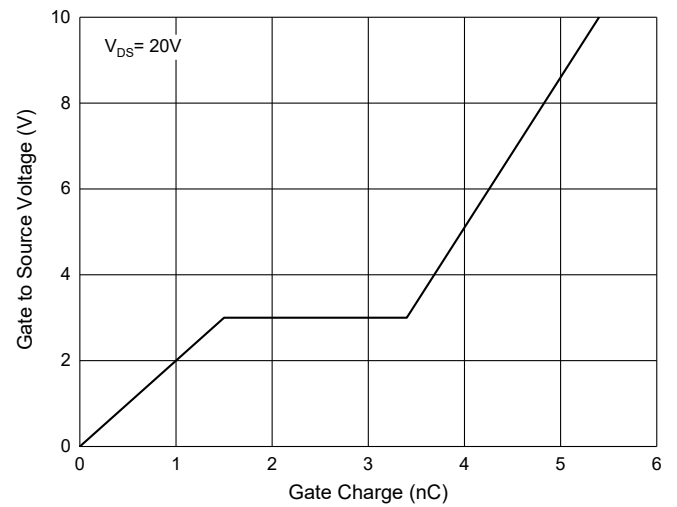


Fig. 5 - $R_{DS(ON)} - I_D$

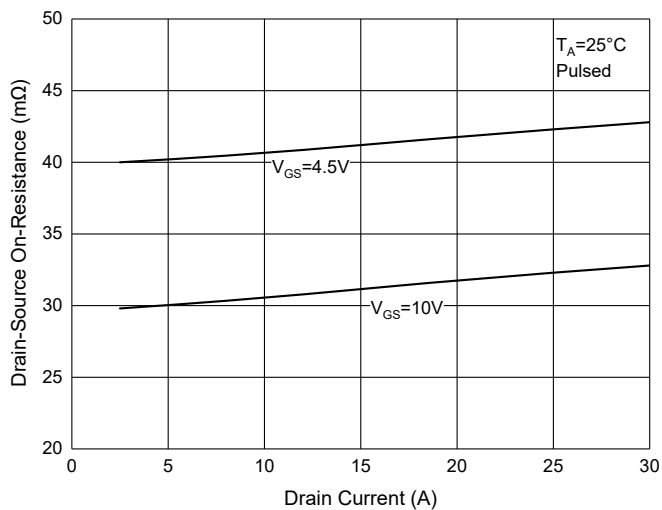
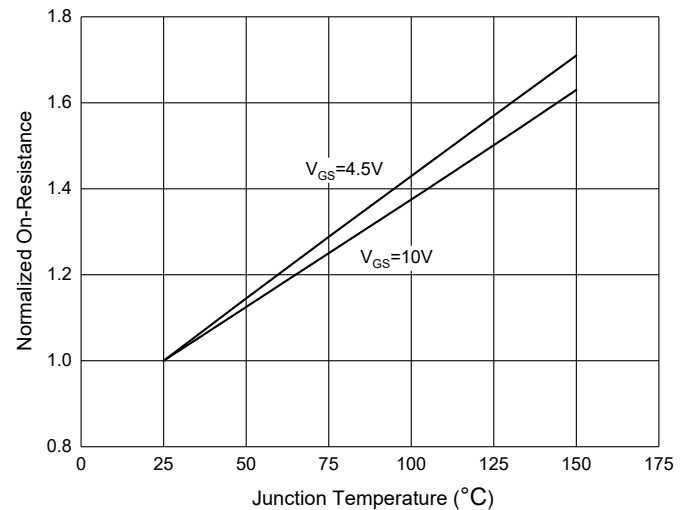


Fig. 6 - $R_{DS(ON)} - \text{Temperature}$



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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