

Features

- Trench Power LV MOSFET Technology
- High Density Cell Design for Low $R_{DS(on)}$
- High Speed Switching
- Halogen Free
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

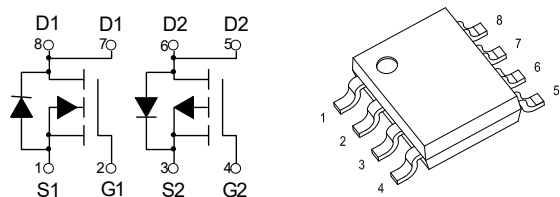
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 62.5°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Total Power Dissipation	P_D	2	W
N-Channel			
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	$T_A=25^\circ\text{C}$	5.6
		$T_A=70^\circ\text{C}$	4.5
Pulsed Drain Current ⁽¹⁾	I_{DM}	23	A
P-Channel			
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	$T_A=25^\circ\text{C}$	-4.4
		$T_A=70^\circ\text{C}$	-3.5
Pulsed Drain Current ⁽¹⁾	I_{DM}	-27	A

Note:

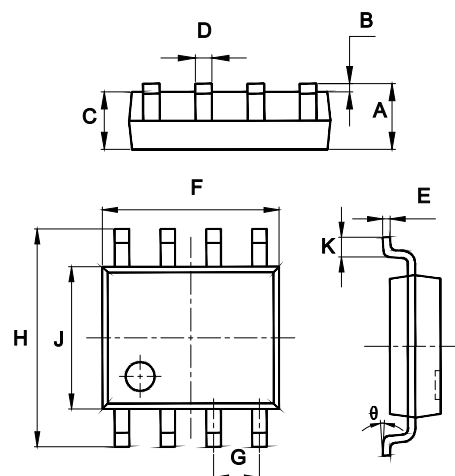
1. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

Internal Structure:



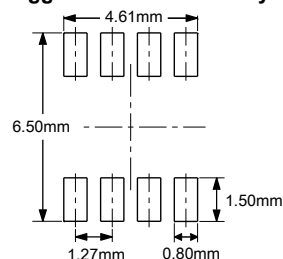
**Dual
N&P-Channel
MOSFET**

SOP-8



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.053	0.069	1.35	1.75	
B	0.004	0.010	0.10	0.25	
C	0.053	0.061	1.35	1.55	
D	0.013	0.020	0.33	0.51	
E	0.007	0.010	0.17	0.25	
F	0.185	0.200	4.70	5.10	
G	0.050		1.270		TYP.
H	0.228	0.244	5.80	6.20	
J	0.150	0.157	3.80	4.00	
K	0.016	0.050	0.40	1.27	
θ	0°	8°	0°	8°	

Suggested Solder Pad Layout



Electrical Characteristics @ 25°C (Unless Otherwise Specified)
N-Channel

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 12V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$			1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.65	0.9	1.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=5.6A$		19	25	m Ω
		$V_{GS}=4.5V, I_D=5.0A$		22	31	
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V, f=1MHz$		535		pF
Output Capacitance	C_{oss}			130		
Reverse Transfer Capacitance	C_{rss}			36		
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS}=15V, V_{GS}=4.5V, I_D=5.6A$		4.8		nC
Gate-Source Charge	Q_{gs}			1.2		
Gate-Drain Charge	Q_{gd}			1.7		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=4.5V, V_{DS}=15V, I_D=1A,$ $R_{GEN}=2.8\Omega$		12		ns
Turn-On Rise Time	t_r			52		
Turn-Off Delay Time	$t_{d(off)}$			17		
Turn-Off Fall Time	t_f			10		
Drain-Source Diode Characteristics and Maximum Ratings						
Body-Diode Continuous Current	I_S				5.6	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=5.6A$		0.8	1.2	V

Electrical Characteristics @ 25°C (Unless Otherwise Specified)
P-Channel

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 12V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V$			-1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.6	-0.9	-1.4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-4.4A$		38	55	m Ω
		$V_{GS}=-4.5V, I_D=-4A$		45	66	
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$		680		pF
Output Capacitance	C_{oss}			105		
Reverse Transfer Capacitance	C_{rss}			68		
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS}=-15V, V_{GS}=-10V, I_D=-4.4A$		7.2		nC
Gate-Source Charge	Q_{gs}			1.2		
Gate-Drain Charge	Q_{gd}			1.6		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=-10V, V_{DS}=-15V, I_D=-1A,$ $R_{GEN}=2.5\Omega, R_L=15\Omega$		15		ns
Turn-On Rise Time	t_r			63		
Turn-Off Delay Time	$t_{d(off)}$			21		
Turn-Off Fall Time	t_f			12		
Drain-Source Diode Characteristics and Maximum Ratings						
Body-Diode Continuous Current	I_S				-4.4	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-4.4A$		-0.8	-1.2	V

Curve Characteristics
N-Channel

Fig. 1 - Typical Output Characteristics

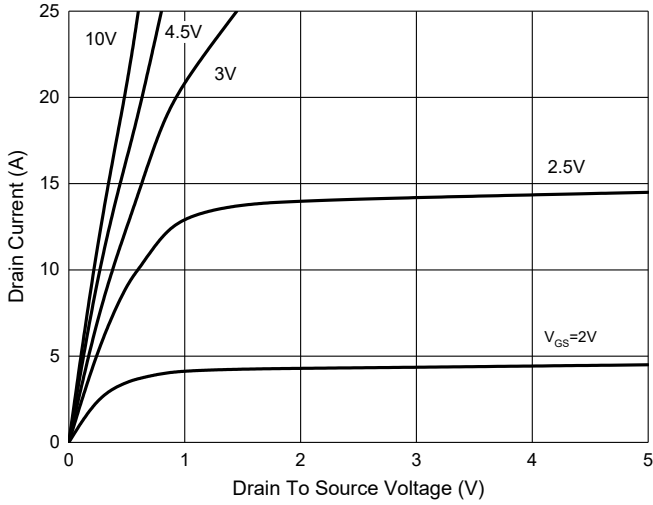


Fig. 2 - Transfer Characteristics

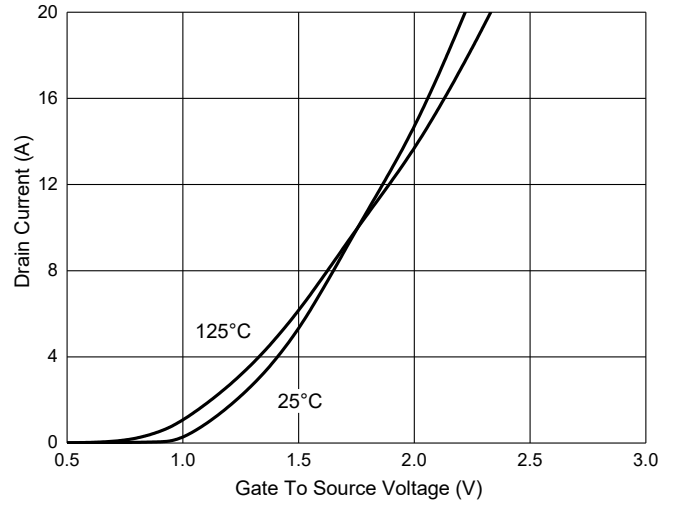


Fig. 3 - $R_{DS(ON)} - I_D$

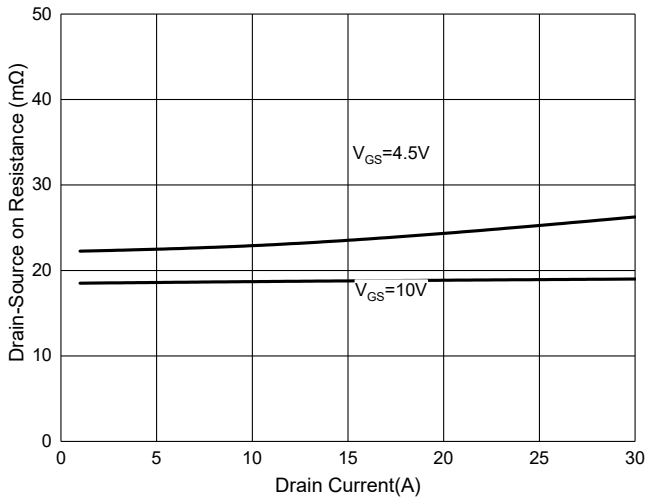


Fig. 4 - Normalized On Resistance Characteristics

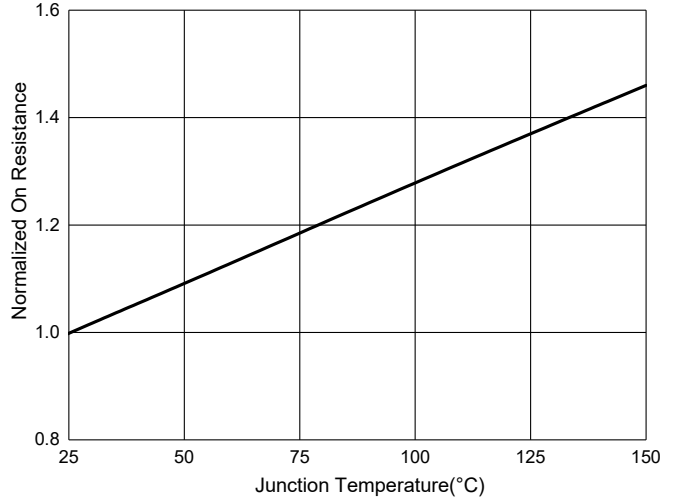


Fig. 5 - Capacitance Characteristics

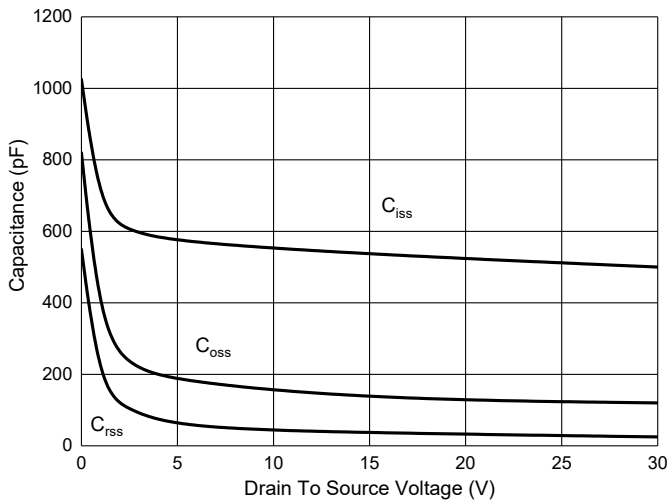
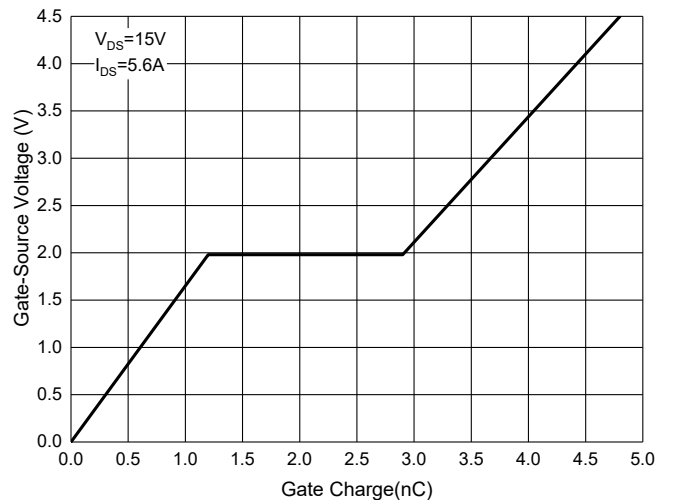


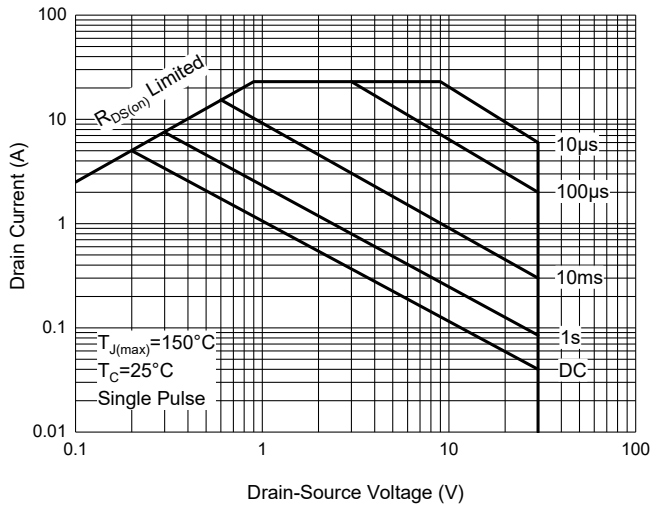
Fig. 6 - Gate Charge



Curve Characteristics

N-Channel

Fig. 7 - Safe Operation Area



P-Channel

Fig. 8 - Typical Output Characteristics

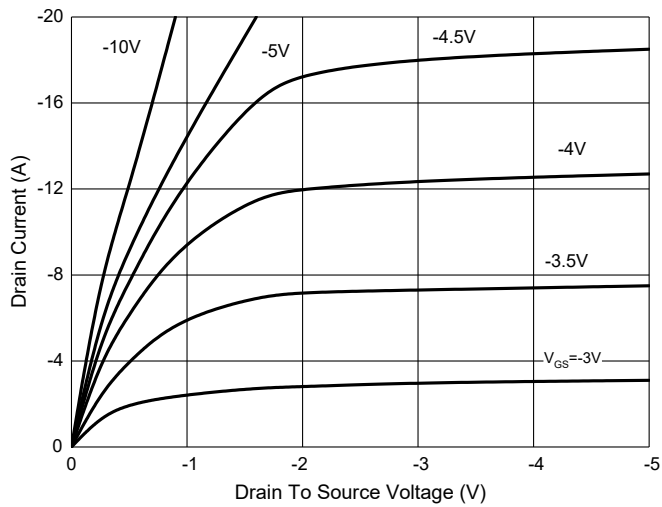


Fig. 9 - Transfer Characteristics

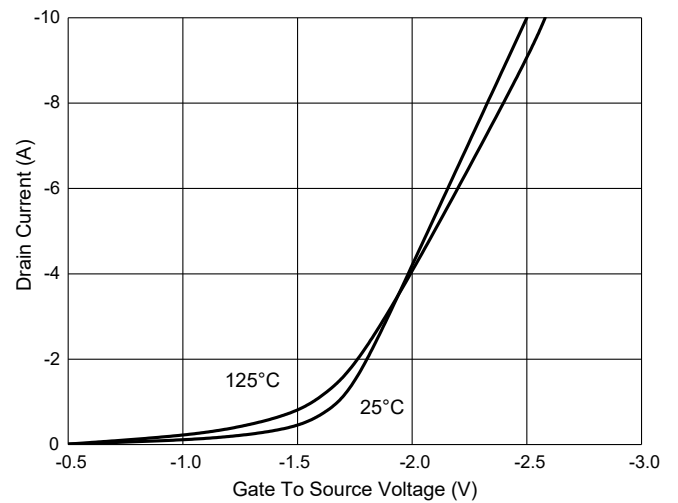


Fig. 10 - $R_{DS(ON)} - I_D$

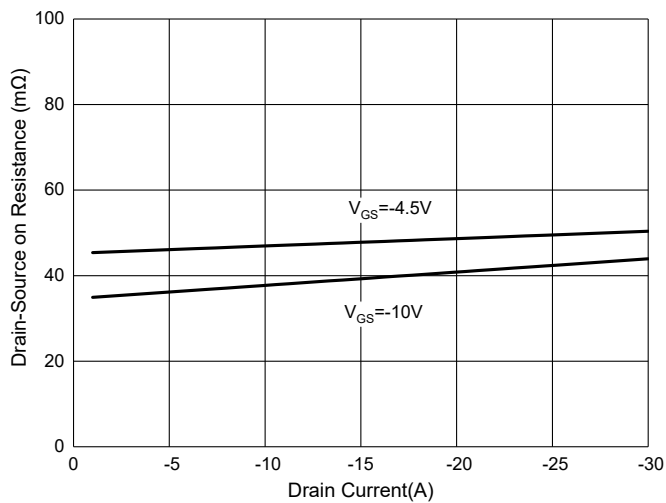
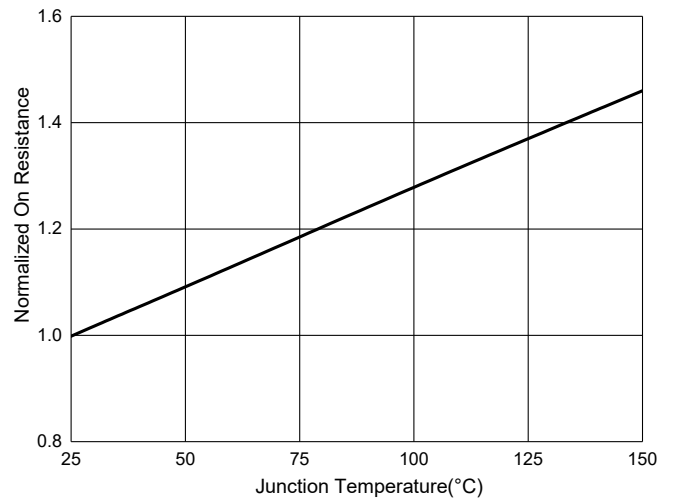


Fig. 11 - Normalized On Resistance Characteristics



Curve Characteristics

P-Channel

Fig. 12 - Capacitance Characteristics

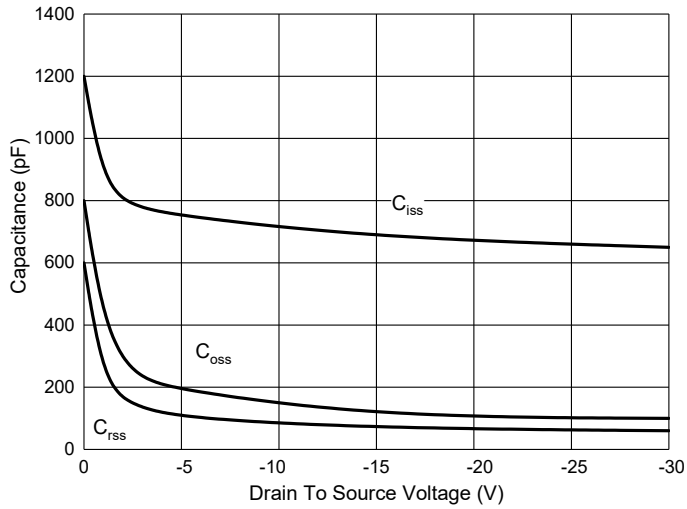


Fig. 13 - Gate Charge

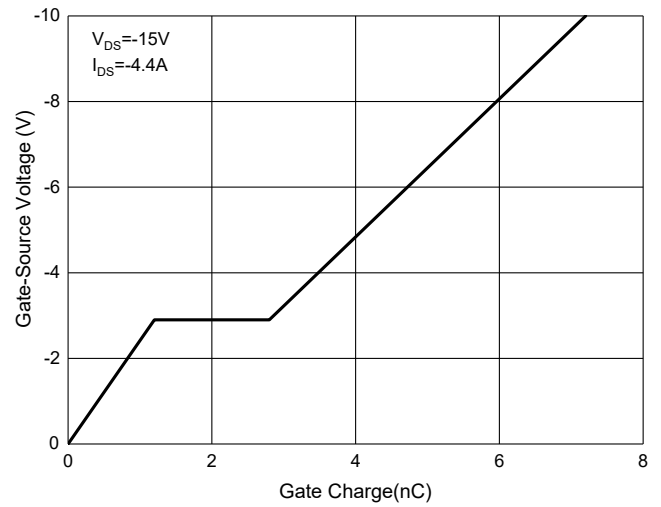
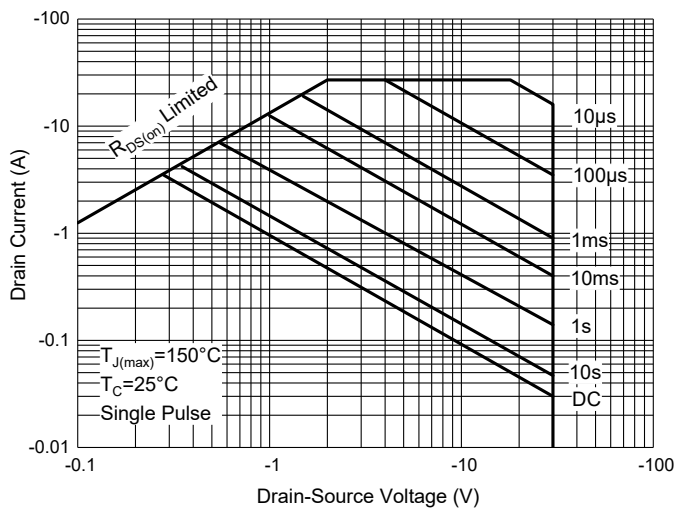


Fig. 14 - Safe Operation Area



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 4Kpcs/Reel

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