



P-Channel 60-V (D-S) MOSFET

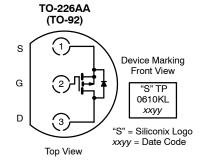
PRODUCT SUMMARY							
V _{(BR)DSS(min)} (V)	$r_{DS(on)}$ (Ω)	V _{GS(th)} (V)	I _D (A)				
-60	6 @ V _{GS} = -10 V	−1 to −3.0	-0.27				
	10 @ V _{GS} = -4.5 V	-110-3.0	-0.21				

FEATURES

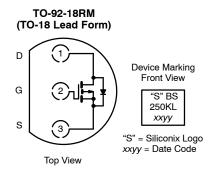
TrenchFET® Power MOSFET
 ESD Protected: 2000 V

APPLICATIONS

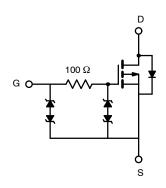
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc.
- Battery Operated Systems
- Power Supply, Converter Circuits
- Motor Control



Ordering Information: TP0610KL-TR1



Ordering Information: BS250KL-TR1



ABSOLUTE MAXIMUM RATINGS (T _A = 25°C UNLESS OTHERWISE NOTED)							
Parameter		Symbol	Limit	Unit			
Drain-Source Voltage		V_{DS}	-60	V			
Gate-Source Voltage		V _{GS}	±20				
Continuous Drain Current	T _A = 25°C		-0.27				
Continuous Drain Current	T _A = 70°C	I _D	-0.22	Α			
Pulse Drain Current ^a		I _{DM}	-1.0				
Power Dissipation	T _A = 25°C	PD	0.8	w			
Power Dissipation	T _A = 70°C	1 '0	0.51				
Maximum Junction-to-Ambient		R_{thJA}	156	°C/W			
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55 to 150	°C			

Notes

a. Pulse width limited by maximum junction temperature.

TP0610KL/BS250KL

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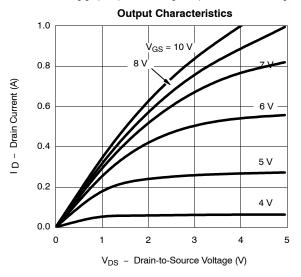


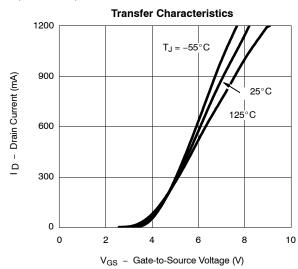
SPECIFICATIONS (TA	SPECIFICATIONS (T _A = 25°C UNLESS OTHERWISE NOTED)								
Parameter	Symbol	Test Condition	Min	Тур	Max	Unit			
Static						•			
Drain-Source Breakdown Voltage	V _{(BR)DSS}	$V_{GS} = 0 \text{ V}, I_{D} = -10 \mu A$	-60			V			
Gate-Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_D = -250 \mu A$	-1	-2.1	-3.0	1 '			
Gate-Body Leakage		V_{DS} = 0 V, V_{GS} = ± 20 V			±10	μΑ			
		V_{DS} = 0 V, V_{GS} = ± 10 V			± 200	nA			
	IGSS	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 10 \text{ V}, T_J = 85^{\circ}\text{C}$			±500				
		$V_{DS} = 0 \text{ V}, V_{GS} = \pm 5 \text{ V}$			± 100				
Zero Gate Voltage Drain Current		$V_{DS} = -60 \text{ V}, V_{GS} = 0 \text{ V}$			-1	μΑ			
	I _{DSS}	$V_{DS} = -60 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 55^{\circ}\text{C}$			-10				
On-State Drain Current ^a		$V_{DS} = -10 \text{ V}, V_{GS} = -4.5 \text{ V}$	-50			mA			
	I _{D(on)}	$V_{DS} = -10 \text{ V}, V_{GS} = -10 \text{ V}$	-600						
Drain-Source On-Resistance ^a		$V_{GS} = -4.5 \text{ V}, I_D = -25 \text{ mA}$		5.5	10	Ω			
	r _{DS(on)}	$V_{GS} = -10 \text{ V}, I_D = -500 \text{ mA}$		3.1	6				
		$V_{GS} = -10 \text{ V}, I_D = -500 \text{ mA}, T_J = 125^{\circ}\text{C}$		4.7	9				
Forward Transconductancea	9fs	$V_{DS} = -10 \text{ V}, I_D = -100 \text{ mA}$		180		mS			
Diode Forward Voltage ^a	V_{SD}	$I_S = -200 \text{ mA}, V_{GS} = 0 \text{ V}$		-0.9	-1.4	V			
Dynamic ^b				•					
Total Gate Charge	Qg	$V_{DS} = -30 \text{ V}, V_{GS} = -15 \text{ V}, I_{D} \cong -500 \text{ mA}$		1.7	3	nC			
Gate-Source Charge	Q _{gs}			0.26					
Gate-Drain Charge	Q _{gd}			0.46					
Gate Resistance	R _g			285		Ω			
Turn-On Time	t _{d(on)}			2.4	5				
	t _r	$V_{DD} = -25 \text{ V}, R_L = 150 \ \Omega$ $I_D \cong -150 \text{ mA}, V_{GEN} = -10 \text{ V}$		15.5	25	1			
Turn-Off Time	t _{d(off)}	$I_D \cong -150 \text{ mA}, V_{GEN} = -10 \text{ V}$ $R_q = 10 \Omega$		21	35	ns			
	t _f	•		12.5	20	1			

Notes
a. Pulse test: PW ≤300 ms duty cycle ≤2%.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

For the following graphs, p-channel negative polarities for all voltage and current values are represented as positive values.

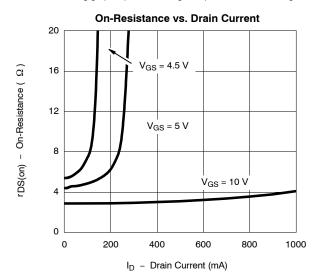


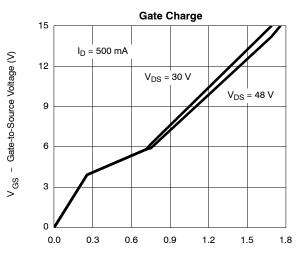


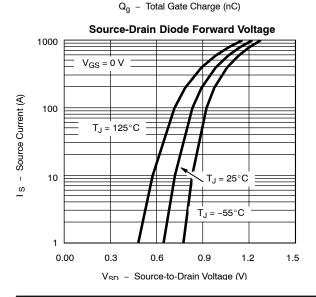


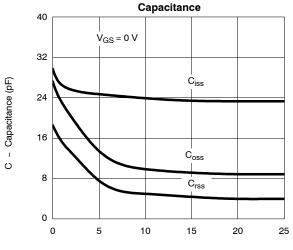
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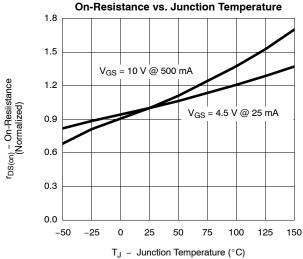


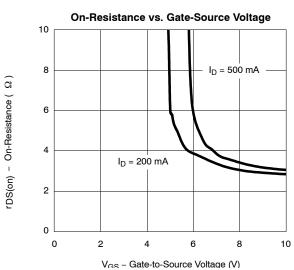






V_{DS} - Drain-to-Source Voltage (V)



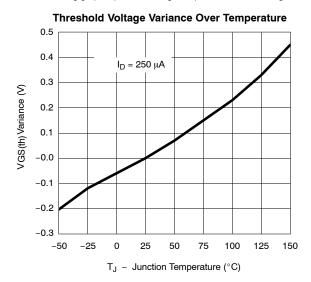


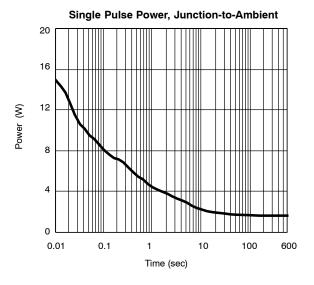
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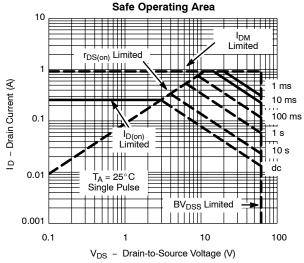


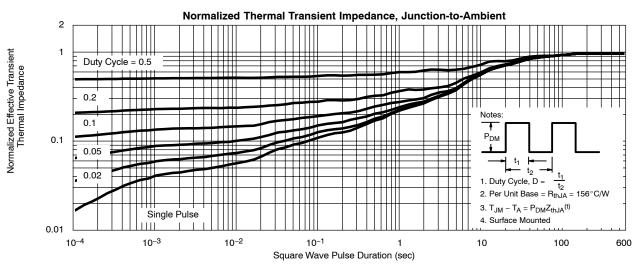
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