

## N-Channel MOSFET

### KX7N10L

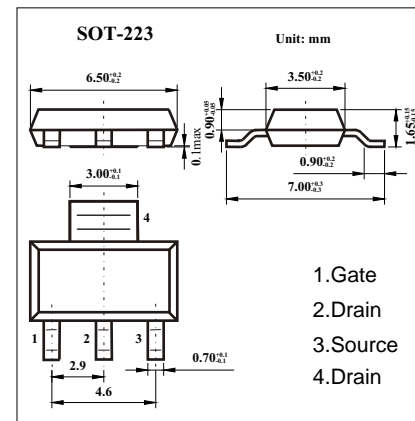
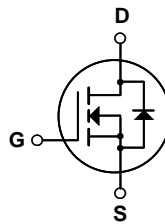
#### Features

$V_{DS} (V) = 100V$

$I_D = 1.7 A (V_{GS} = 10V)$

$R_{DS(ON)} < 350m\Omega (V_{GS} = 10V), I_D=0.85A$

$R_{DS(ON)} < 380m\Omega (V_{GS} = 5V), I_D=0.85A$



#### Absolute Maximum Ratings $T_a = 25$

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	
Continuous Drain Current	$I_D$	- Continuous ( $T_C = 25^\circ C$ )	1.7
		- Continuous ( $T_C = 70^\circ C$ )	1.36
Pulsed Drain Current	$I_{DM}$	6.8	A
Single Pulsed Avalanche Energy	$E_{AS}$	50	mJ
Repetitive Avalanche Energy	$E_{AR}$	0.2	
Avalanche Current	$I_{AR}$	1.7	A
Power Dissipation ( $T = 25^\circ C$ )	$P_D$	- Derate above $25^\circ C$	2.0
			0.016
Thermal Resistance Junction- to-Ambient	$R_{thJA}$	62.5	/W
Peak Diode Recovery $dv/dt$	$dv/dt$	6.0	V/ns
Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	$T_L$	300	
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	

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Electrical Characteristics Ta = 25

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V <sub>DSS</sub>	I <sub>D</sub> =250 μ A, V <sub>GS</sub> =0V	100			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>Ds</sub> =100V, V <sub>GS</sub> =0V			1	μ A
		V <sub>Ds</sub> =80V, V <sub>GS</sub> =0V, T <sub>J</sub> =125			10	
Gate-Body leakage current	I <sub>GSS</sub>	V <sub>Ds</sub> =0V, V <sub>GS</sub> =± 20V			± 100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>Ds</sub> =V <sub>GS</sub> I <sub>D</sub> =250 μ A	1.0		2.0	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =0.85A		275	350	m
		V <sub>GS</sub> =5V, I <sub>D</sub> =0.85A		300	380	
Forward Transconductance	g <sub>FS</sub>	V <sub>Ds</sub> =30V, I <sub>D</sub> =0.85A		2.75		S
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>Ds</sub> =25V, f=1MHz		220	290	pF
Output Capacitance	C <sub>oss</sub>			55	72	
Reverse Transfer Capacitance	C <sub>rss</sub>			12	15	
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =5V, V <sub>Ds</sub> =80V, I <sub>D</sub> =7.5A		4.6	6.0	nC
Gate Source Charge	Q <sub>gs</sub>			1.0		
Gate Drain Charge	Q <sub>gd</sub>			2.6		
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>Ds</sub> =50V, I <sub>D</sub> =7.3A, R <sub>G</sub> =25		9	30	ns
Turn-On Rise Time	t <sub>r</sub>			100	210	
Turn-Off DelayTime	t <sub>d(off)</sub>			17	45	
Turn-Off Fall Time	t <sub>f</sub>			50	110	
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>S</sub> =7.3A, dI/dt=100A/μ s		70		
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>S</sub> =7.3A, dI/dt=100A/μ s		140		nC
Maximum Body-Diode Continuous Current	I <sub>S</sub>				1.7	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =1.7A, V <sub>GS</sub> =0V			1.5	V

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## Typical Characteristics

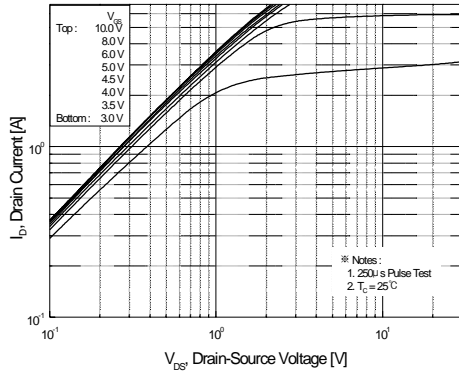


Figure 1. On-Region Characteristics

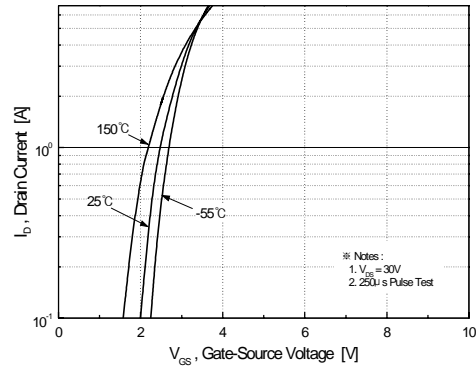


Figure 2. Transfer Characteristics

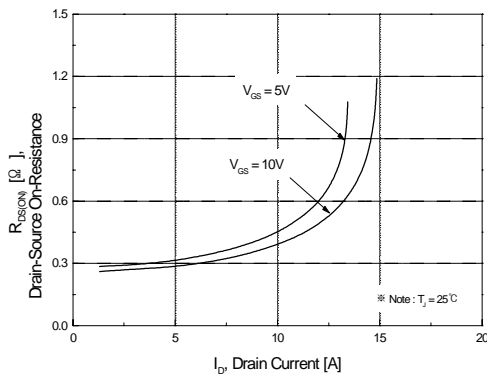


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

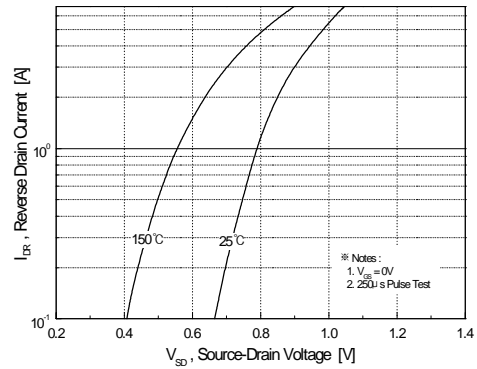


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

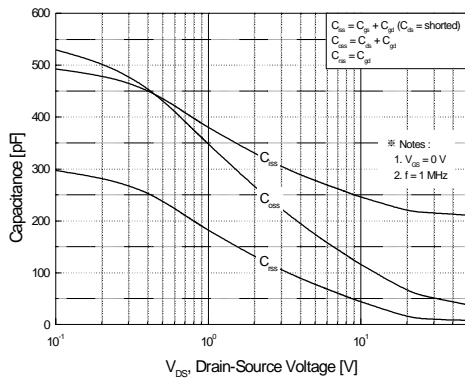


Figure 5. Capacitance Characteristics

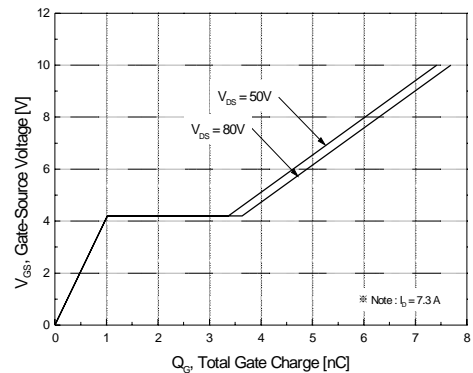


Figure 6. Gate Charge Characteristics

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## Typical Characteristics

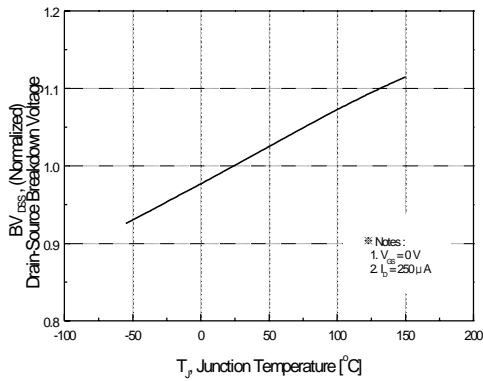


Figure 7. Breakdown Voltage Variation vs. Temperature

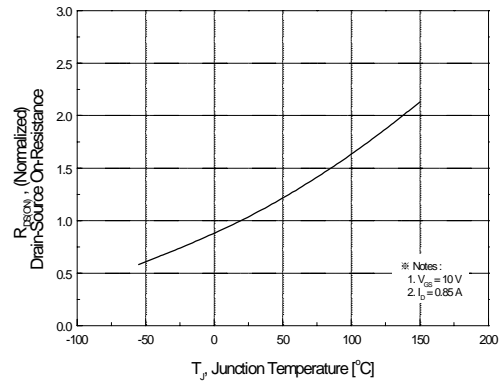


Figure 8. On-Resistance Variation vs. Temperature

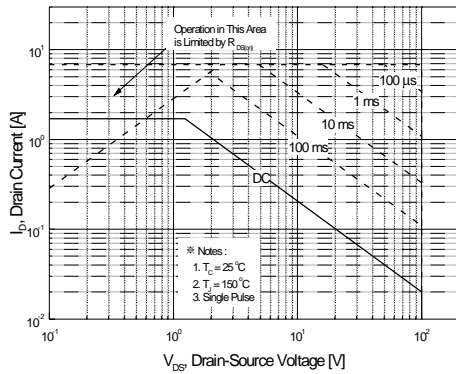


Figure 9. Maximum Safe Operating Area

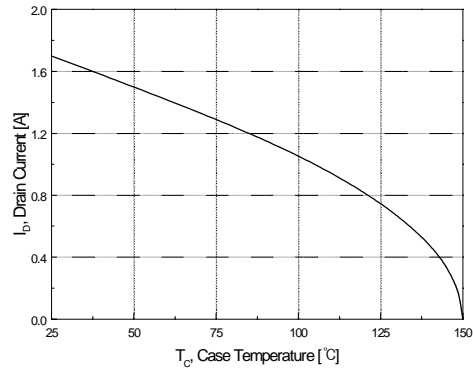


Figure 10. Maximum Drain Current vs. Case Temperature

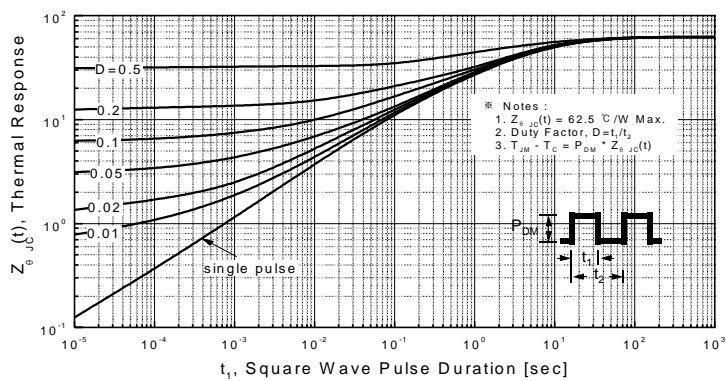


Figure 11. Transient Thermal Response Curve