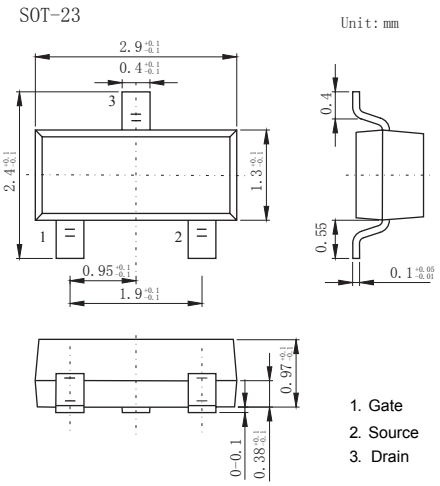
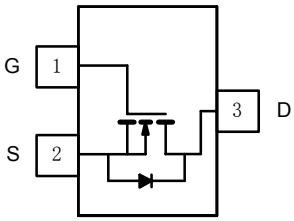
IRLML0040

N-Channel MOSFET



■ Features

- $V_{DS\ (V)}$ = 40V
- I_D = 3.9 A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 45mΩ (V_{GS} = 10V)
- $R_{DS(ON)}$ < 58mΩ (V_{GS} = 4.5V)



■ Absolute Maximum Ratings Ta = 25℃

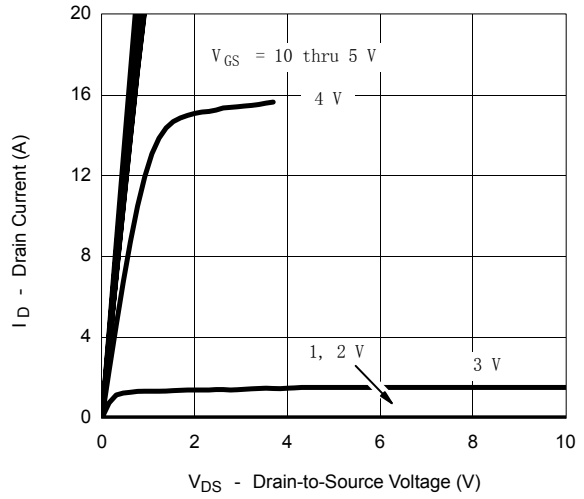
Parameter		Symbol	5 Sec	Steady State	Unit
Drain-Source Voltage		V_{DS}	40		V
Gate-Source Voltage		V_{GS}	±20		
Continuous Drain Current	Ta=25℃	I_D	3.9	3	A
	Ta=70℃		3.1	2.4	
Pulsed Drain Current		I_{DM}	16		
Power Dissipation	Ta=25℃	P_D	1.28	0.75	W
	Ta=70℃		0.8	0.48	
Thermal Resistance.Junction- to-Ambient		R_{thJA}	100	166	℃/W
Thermal Resistance.Junction- to-Case		R_{thJC}		50	
Junction Temperature		T_J	150		℃
Storage Temperature Range		T_{stg}	-55 to 150		

■ Electrical Characteristics Ta = 25℃

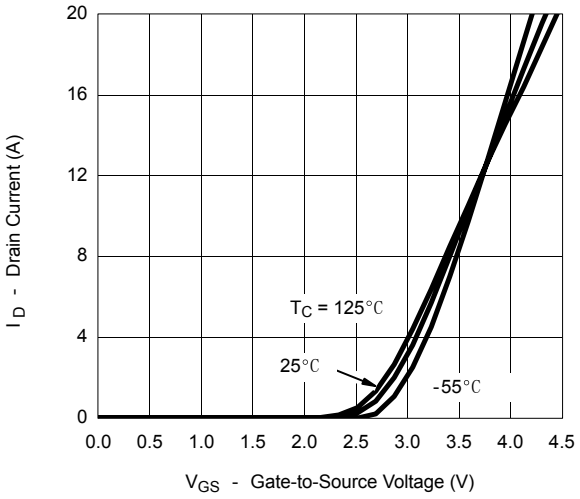
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=32V, V_{GS}=0V			0.5	uA
		V_{DS}=32V, V_{GS}=0V, T_J=55℃			10	
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250uA	1		3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=3.9A			45	mΩ
		V_{GS} =4.5V, I_D=3.5A			58	
On State Drain Current	$I_{D(ON)}$	V_{DS}≥4.5V, V_{GS}=10V	6			A
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=3.9A		11		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=20V, f=1MHz		540		pF
Output Capacitance	C_{oss}			80		
Reverse Transfer Capacitance	C_{rss}			45		
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz		1.8		Ω
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=20V, I_D=3.9A		10	15	nC
Gate Source Charge	Q_{gs}			1.6		
Gate Drain Charge	Q_{gd}			2.1		
Turn-On DelayTime	$t_{d(on)}$	V_{DD} = 20V, R_L = 20Ω I_D=1A, V_{GEN} = 10V, R_G = 6Ω		5	10	ns
Turn-On Rise Time	t_r			12	20	
Turn-Off DelayTime	$t_{d(off)}$			20	30	
Turn-Off Fall Time	t_f			15	25	
Maximum Body-Diode Continuous Current	I_S				1.25	A
Diode Forward Voltage	V_{SD}	I_S=1.25A,V_{GS}=0V			1.2	V

■ Typical Characterisitics

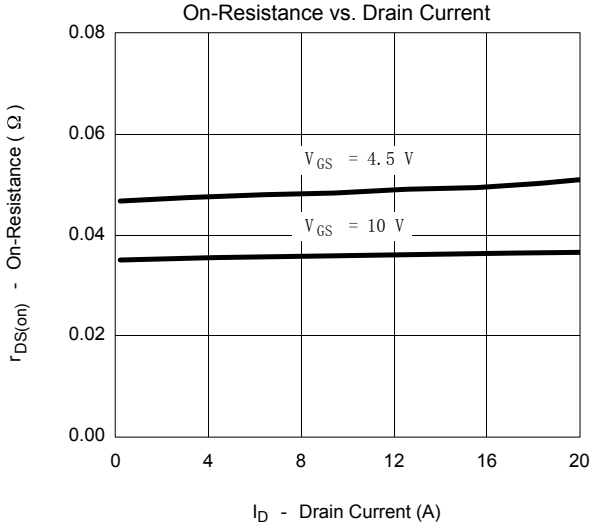
Output Characteristics



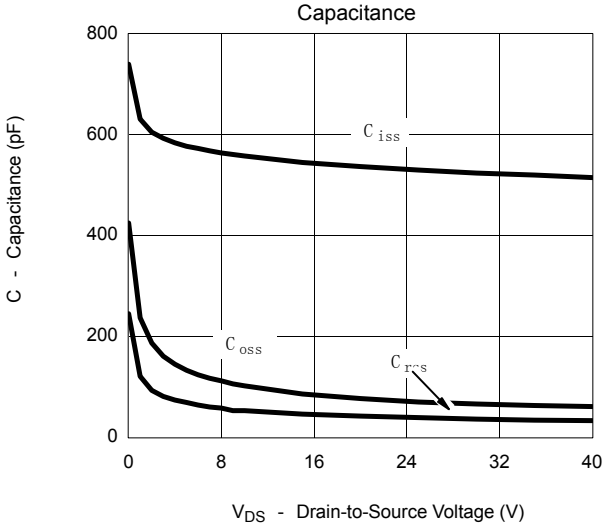
Transfer Characteristics



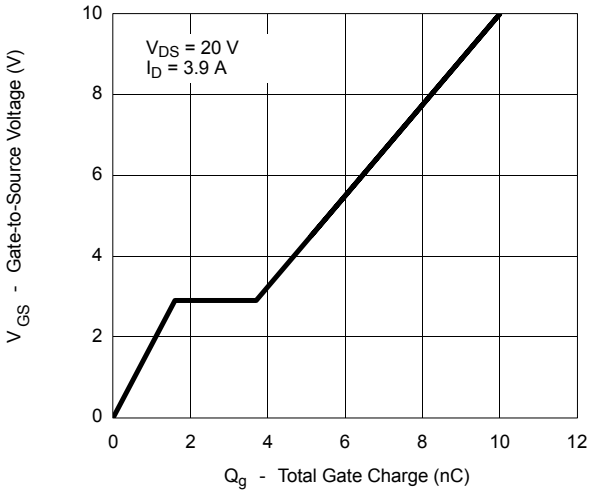
On-Resistance vs. Drain Current



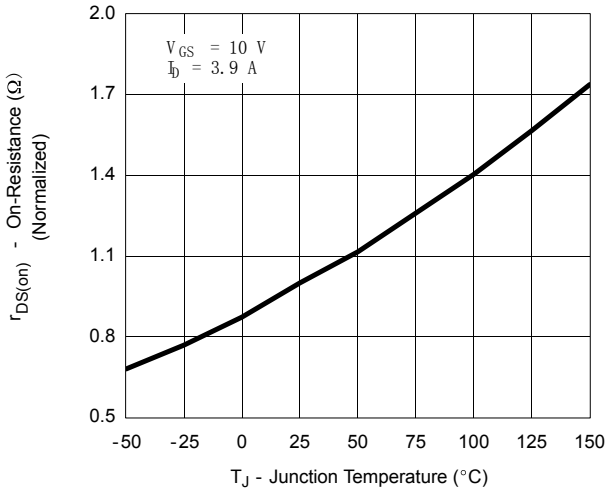
Capacitance



Gate Charge

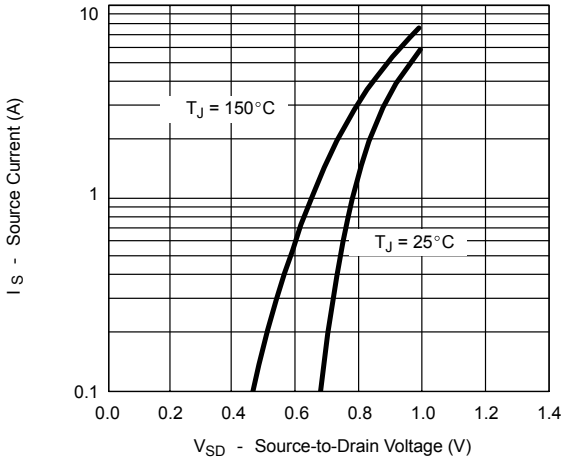


On-Resistance vs. Junction Temperature

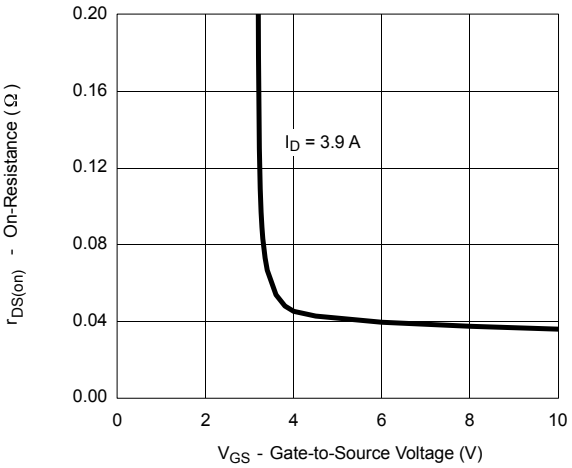


■ Typical Characterisitics

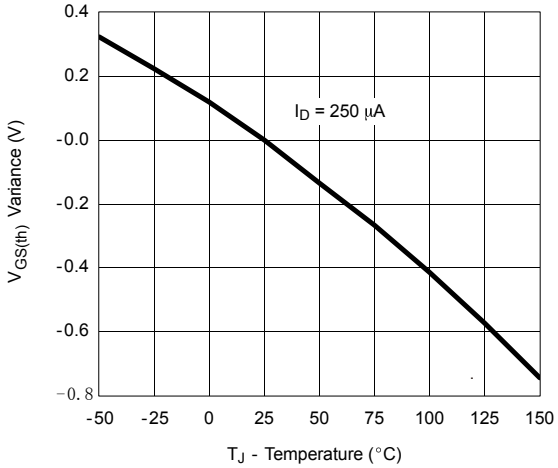
Source-Drain Diode Forward Voltage



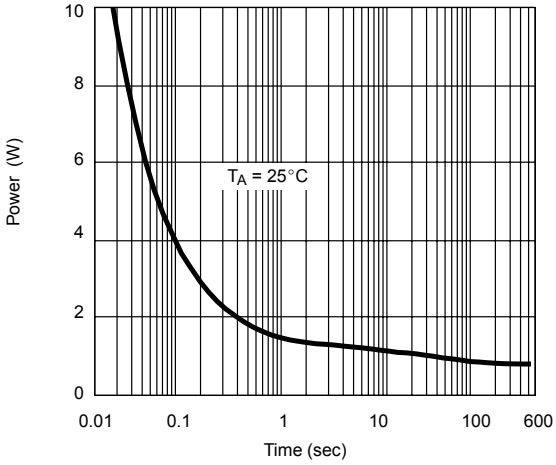
On-Resistance vs. Gate-to-Source Voltage



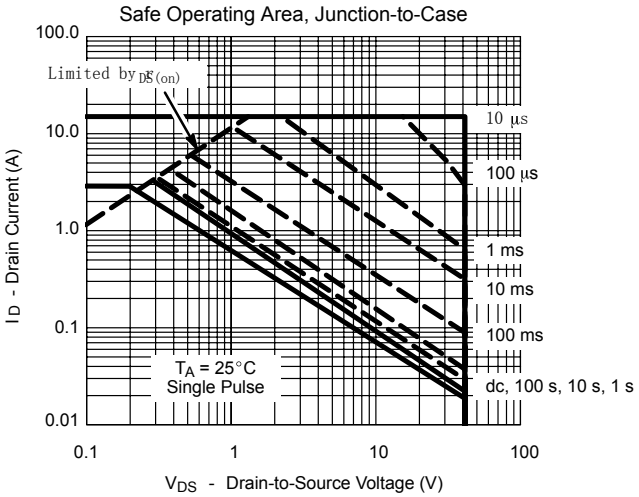
Threshold Voltage



Single Pulse Power



Safe Operating Area, Junction-to-Case



■ Typical Characterisitics