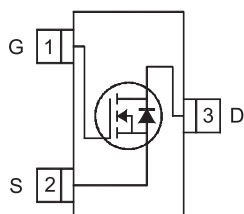


# N Channel MOSFET

**multicomp**PRO

**RoHS  
Compliant**



## Features

- $V_{DS}$  (V) =100V
- $I_D$  =1.6 A ( $V_{GS}$  =10V)
- $R_{DS(ON)}$  < 22m $\Omega$  ( $V_{GS}$  =10V)
- $R_{DS(ON)}$  < 235m $\Omega$  ( $V_{GS}$  =4.5V)

## Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 16$	
Continuous Drain Current @ $V_{GS}=10V$	$I_D$	1.6	A
		1.3	
Pulsed Drain Current	$I_{DM}$	7	
Power Dissipation	$P_D$	1.3	W
		0.8	
Thermal Resistance.Junction- to-Ambient (Note.1)	$R_{thJA}$	100	$^{\circ}C/W$
		99	
Linear Derating Factor		0.01	W/ $^{\circ}C$
Junction Temperature	$T_J$	150	$^{\circ}C$
Storage Temperature Range	$T_{stg}$	-55 to 150	

Note.1: Surface mounted on 1 in square Cu board

## Electrical Characteristics Ta = 25°C

Characteristic	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{DSS}$	$I_D=250\mu A$ , $V_{GS}=0V$	100			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=100V$ , $V_{GS}=0V$			20	$\mu A$
		$V_{DS}=100V$ , $V_{GS}=0V$ , $T_J=125^{\circ}C$			250	
Gate-Body leakage current	$I_{GSS}$	$V_{DS}=0V$ , $V_{GS}=\pm 16V$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	1		2.5	V
Static Drain-Source On-Resistance (Note.1)	$R_{DS(on)}$	$V_{GS}=4.5V$ , $I_D=1.3A$		190	235	m $\Omega$
		$V_{GS}=10V$ , $I_D=1.6A$		178	220	
Forward Transconductance	$g_{FS}$	$V_{DS}=50V$ , $I_D=1.6A$	5.7			S

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Characteristic	Symbol	Conditions	Min	Typ	Max	Unit
Input Capacitance	$C_{iss}$	$V_{GS}=0V, V_{DS}=25V, f=1MHz$		290		pF
Output Capacitance	$C_{oss}$			27		
Reverse Transfer Capacitance	$C_{rss}$			13		
Gate Resistance	$R_g$			1.3		$\Omega$
Total Gate Charge	$Q_g$	$V_{GS}=4.5V, V_{DS}=50V, I_D=1.6A$		2.5		nC
Gate Source Charge	$Q_{gs}$			0.5		
Gate Drain Charge	$Q_{gd}$			1.2		
Turn-On DelayTime	$t_{d(on)}$	$V_{GS}=4.5V, V_{DS}=50V, I_D=1A, R_{GEN}=6.8\Omega$		2.2		nS
Turn-On Rise Time	$t_r$			2.1		
Turn-Off DelayTime	$t_{d(off)}$			9		
Turn-Off Fall Time	$t_f$			3.6		
Body Diode Reverse Recovery Time	$t_{rr}$	$V_R=50V, I_F=1.1A, dI/dt=100A/\mu s, T_J=25^\circ C$ (Note.1)		20	30	nc
Body Diode Reverse Recovery Charge	$Q_{rr}$			13	20	
Maximum Body-Diode Continuous Current	$I_S$				1.1	A
Pulsed Source Current	$I_{SM}$	(Note.2)			7	
Diode Forward Voltage	$V_{SD}$	$I_S=1.1A, V_{GS}=0V, T_J=25^\circ$ (Note.1)			1.3	V

Note.1 : Pulse width  $\leq 400\mu s$ ; duty cycle  $\leq 2\%$ .

Note.2 : Repetitive rating; pulse width limited by max. junction temperature.

## Typical Characteristics

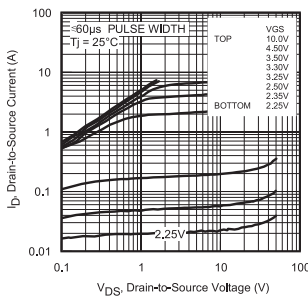


Fig 1. Typical Output Characteristics

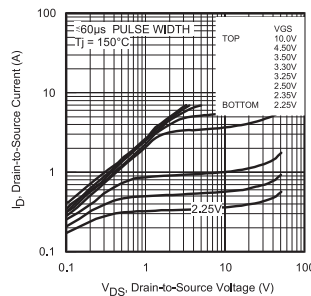


Fig 2. Typical Output Characteristics

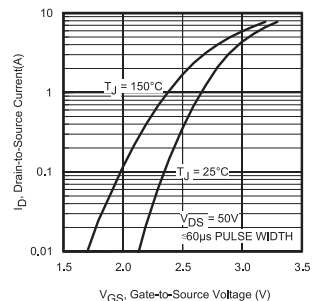


Fig 3. Typical Transfer Characteristics

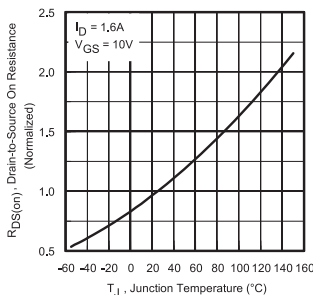


Fig 4. Normalized On-Resistance Vs. Temperature

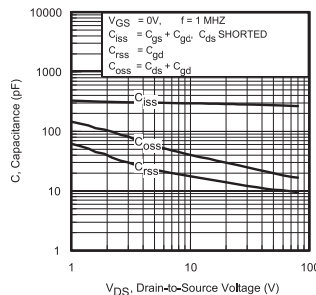


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

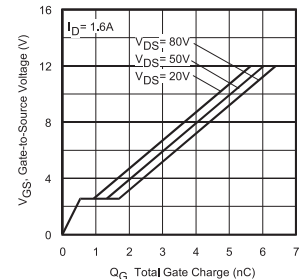


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

## Typical Characteristics

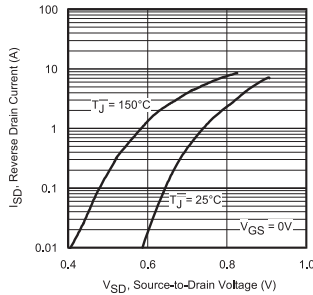


Fig 7. Typical Source-Drain Diode Forward Voltage

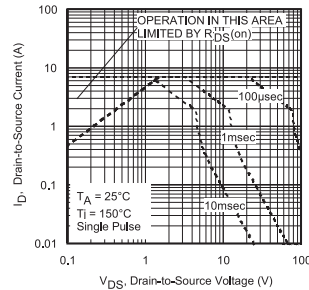


Fig 8. Maximum Safe Operating Area

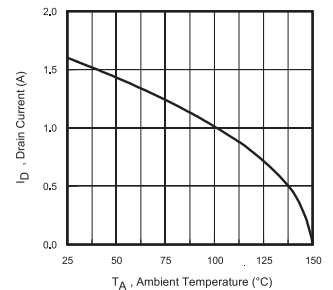


Fig 9. Maximum Drain Current Vs. Ambient Temperature

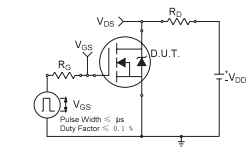


Fig 10a. Switching Time Test Circuit

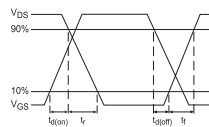


Fig 10b. Switching Time Waveforms

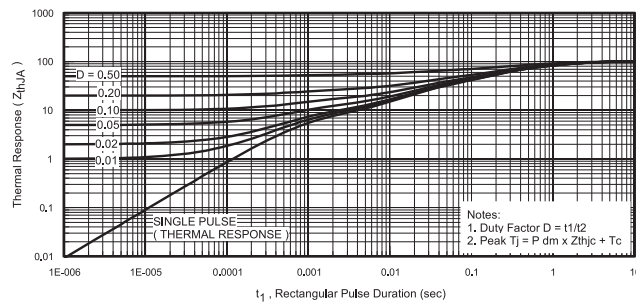


Fig 11. Typical Effective Transient Thermal Impedance, Junction-to-Ambient

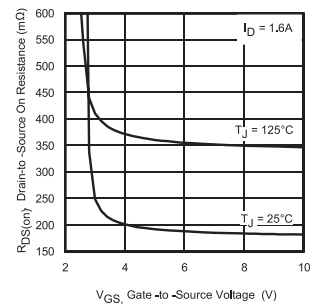


Fig 12. Typical On-Resistance Vs. Gate Voltage

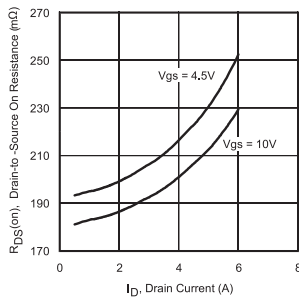


Fig 13. Typical On-Resistance Vs. Drain Current

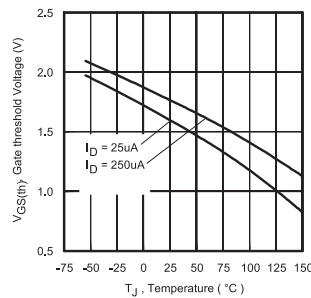


Fig 14. Typical Threshold Voltage Vs. Junction Temperature

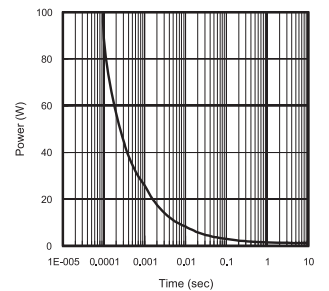


Fig 15. Typical Power Vs. Time

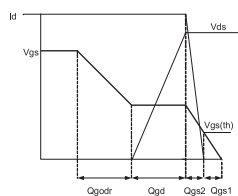


Fig 16a. Basic Gate Charge Waveform

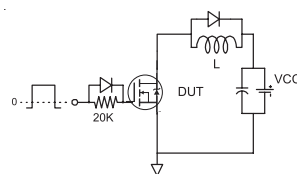
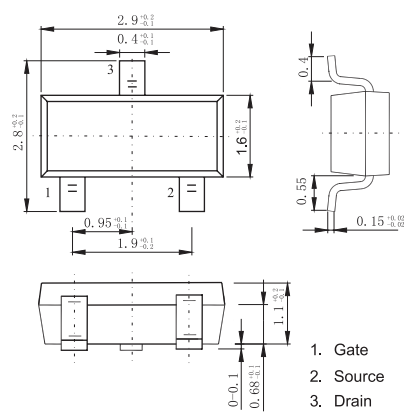


Fig 16b. Gate Charge Test Circuit

Diagram



Dimensions : Millimetres

Part Number Table

Description	Part Number
MOSFET, N Channel, 1.6A, 100V, SOT23-3	IRLML0100

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