IRLML0030TRPbF

HEXFET® Power MOSFET

V$_{DS}$	30	V
V$_{GS\ Max}$	± 20	V
R$_{DS(on)\ max}$ (@V$_{GS}$ = 10V)	27	mΩ
R$_{DS(on)\ max}$ (@V$_{GS}$ = 4.5V)	40	mΩ

Micro3^{TM} (SOT-23)
IRLML0030TRPbF
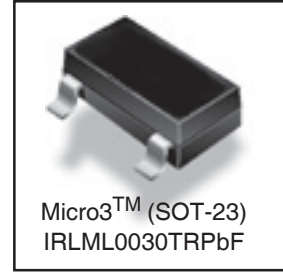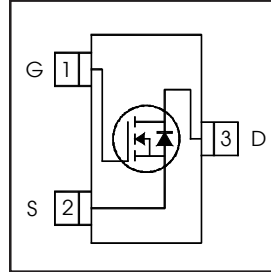
Application(s)

• Load/ System Switch

Features and Benefits

Features		Benefits
Low R$_{DS(on)}$ ($\leq$ 27mΩ)		Lower switching losses
Industry-standard pinout		Multi-vendor compatibility
Compatible with existing Surface Mount Techniques	results in	Easier manufacturing
RoHS compliant containing no lead, no bromide and no halogen	$\Rightarrow$	Environmentally friendly
MSL1, Industrial qualification		Increased reliability

Absolute Maximum Ratings

Symbol	Parameter	Max.	Units
V$_{DS}$	Drain-Source Voltage	30	V
I$_D$ @ T$_A$ = 25°C	Continuous Drain Current, V$_{GS}$ @ 10V	5.3	A
I$_D$ @ T$_A$ = 70°C	Continuous Drain Current, V$_{GS}$ @ 10V	4.3	
I$_{DM}$	Pulsed Drain Current	21	
P$_D$ @T$_A$ = 25°C	Maximum Power Dissipation	1.3	W
P$_D$ @T$_A$ = 70°C	Maximum Power Dissipation	0.8	
	Linear Derating Factor	0.01	W/°C
V$_{GS}$	Gate-to-Source Voltage	± 20	V
T$_J$, T$_{STG}$	Junction and Storage Temperature Range	-55 to + 150	°C

Thermal Resistance

Symbol	Parameter	Typ.	Max.	Units
R$_{\theta JA}$	Junction-to-Ambient ③	——	100	°C/W
R$_{\theta JA}$	Junction-to-Ambient (t<10s) ④	——	99	

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Electric Characteristics @ T_J = 25°C (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	30	——	——	V	V_{GS} = 0V, I_D = 250µA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	——	0.02	——	V/°C	Reference to 25°C, I_D = 1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	——	33	40	mΩ	V_{GS} = 4.5V, I_D = 4.2A ②
		——	22	27		V_{GS} = 10V, I_D = 5.2A ②
$V_{GS(th)}$	Gate Threshold Voltage	1.3	1.7	2.3	V	V_{DS} = V_{GS}, I_D = 25µA
I_{DSS}	Drain-to-Source Leakage Current	——	——	1	µA	V_{DS} =24V, V_{GS} = 0V
		——	——	150		V_{DS} = 24V, V_{GS} = 0V, T_J = 125°C
I_{GSS}	Gate-to-Source Forward Leakage	——	——	100	nA	V_{GS} = 20V
	Gate-to-Source Reverse Leakage	——	——	-100		V_{GS} = -20V
R_G	Internal Gate Resistance	——	2.3	——	Ω	
gfs	Forward Transconductance	9.5	——	——	S	V_{DS} = 10V, I_D = 5.2A
Q_g	Total Gate Charge	——	2.6	——	nC	I_D = 5.2A
Q_{gs}	Gate-to-Source Charge	——	0.8	——		V_{DS} =15V
Q_{gd}	Gate-to-Drain ("Miller") Charge	——	1.1	——		V_{GS} = 4.5V ②
$t_{d(on)}$	Turn-On Delay Time	——	5.2	——	ns	V_{DD} =15V②
t_r	Rise Time	——	4.4	——		I_D = 1.0A
$t_{d(off)}$	Turn-Off Delay Time	——	7.4	——		R_G = 6.8Ω
t_f	Fall Time	——	4.4	——		V_{GS} = 4.5V
C_{iss}	Input Capacitance	——	382	——	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	——	84	——		V_{DS} = 15V
C_{rss}	Reverse Transfer Capacitance	——	39	——		f = 1.0MHz

Source - Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	——	——	1.6	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) ①	——	——	21		
V_{SD}	Diode Forward Voltage	——	——	1.0	V	T_J = 25°C, I_S = 1.6A, V_{GS} = 0V ②
t_{rr}	Reverse Recovery Time	——	11	17	ns	T_J = 25°C, V_R = 15V, I_F=1.6A
Q_{rr}	Reverse Recovery Charge	——	4.0	6.0	nC	di/dt = 100A/µs ②