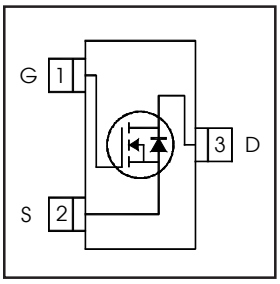
TY Semicondutor®

Product specification

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™ (SOT-23)
IRLML0030TRPbF

Application(s)

- Load/ System Switch

Features and Benefits

Features		Benefits
Low $R_{DS(on)}$ (≤ 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	⇒	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

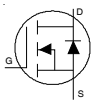
Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-Ambient ③	—	100	°C/W
$R_{\theta JA}$	Junction-to-Ambient (t<10s) ④	—	99	

IRLML0030TRPbF

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