TECH PUBLIC
台舟电子

TPIRLML5103TRPBF

P-Channel Enhancement-Mode MOS FETs

www.sot23.com.tw

Product Summary

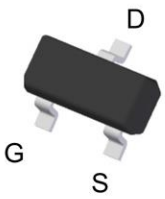
- V_{DS} = -30V,I_D = -2A
  $R_{DS(ON)}$ < 190mΩ @ V_{GS}=-2.5V
  $R_{DS(ON)}$ < 330mΩ @ V_{GS}=-4.5V
- Package SOT-23

Application

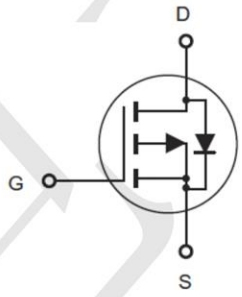
- Battery protection
- Load switch
- Power management

Package and Pin Configuration

SOT23



Circuit diagram



Marking:

Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	-2	A
Drain Current -Pulsed (Note 1)	I_{DM}	-10	A
Maximum Power Dissipation	P_D	1	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃

Thermal Characteristic

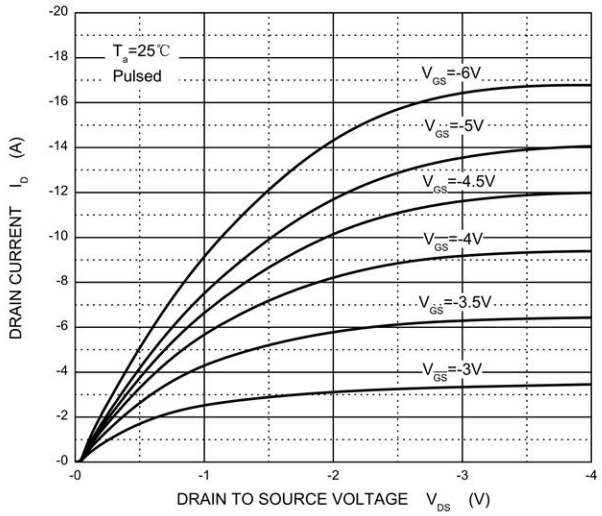
Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$	125	℃/W

Electrical Characteristics (T_A=25℃unless otherwise noted)

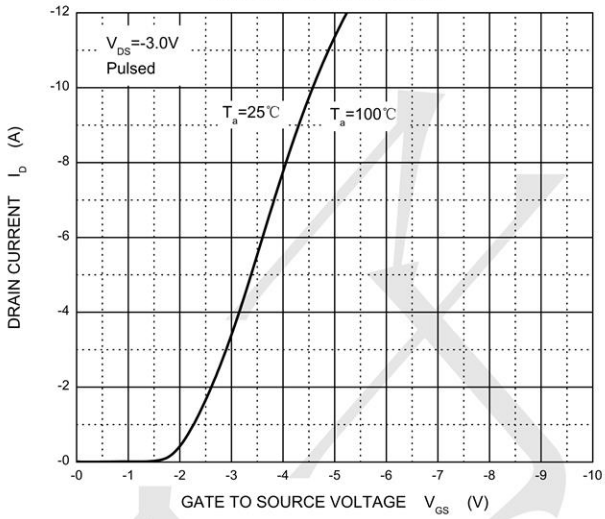
Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-30			V
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1	-1.6	-3	
Gate-Source Leakage	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =-30V, V_{GS} =0V			-1	μA
Drain-Source On-State Resistance[a]	$R_{DS(on)}$	V_{GS} =-10V, I_D =-1.9A			0.190	Ω
		V_{GS} =-4.5V, I_D =-1.4A			0.330	
Forward Transconductance[a]	g_{fs}	V_{DS} =-5V, I_D =-1.9A	1			S
Dynamic[b]						
Input Capacitance	C_{iss}	V_{DS} =-15V,V_{GS} =0V,f =1MHz		155		pF
Output Capacitance	C_{oss}			35		
Reverse Transfer Capacitance	C_{rss}			25		
Total Gate Charge	Q_g	V_{DS} =-15V,V_{GS} =-10V,I_D =-1.9A		4	8	nC
		V_{DS} =-15V,V_{GS} =-4.5V,I_D=-1.9A		2	4	
Gate-Source Charge	Q_{gs}			0.6		
Gate-Drain Charge	Q_{gd}			1		
Gate Resistance	R_g	f =1MHz	1.7	8.5	17	Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=-15V, R_L=10Ω, I_D =-1.5A, V_{GEN}=-10V,Rg=1Ω		4	8	ns
Rise Time	t_r			11	18	
Turn-Off Delay Time	$t_{d(off)}$			11	18	
Fall Time	t_f			8	16	
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=-15V, R_L=10Ω, I_D =-1.5A, V_{GEN}=-4.5V,Rg=1Ω		36	44	
Rise Time	t_r			37	45	
Turn-Off Delay Time	$t_{d(off)}$			12	18	
Fall Time	t_f			9	14	
Drain-source Body diode characteristics						
Continuous Source-Drain Diode Current	I_S	T_C=25℃			-2	A
Pulse Diode Forward Current[a]	I_{SM}				-10	
Body Diode Voltage	V_{SD}	I_S=-1.5A		-0.8	-1.2	V

Typical Electrical and Thermal Characteristics

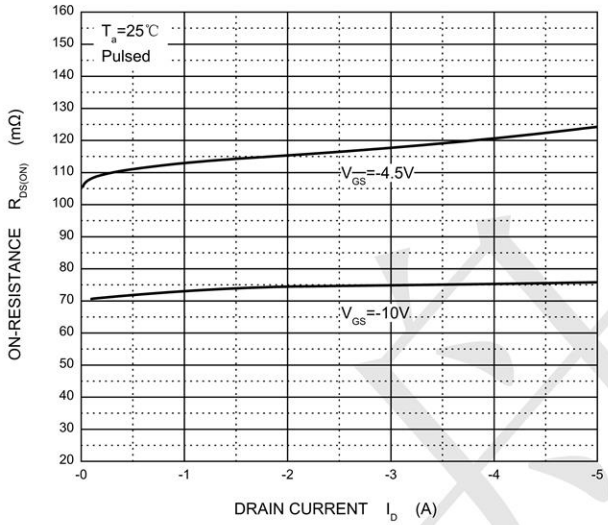
Output Characteristics



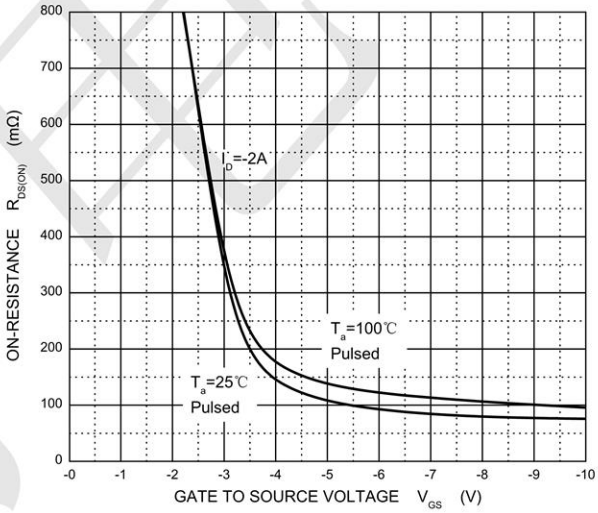
Transfer Characteristics



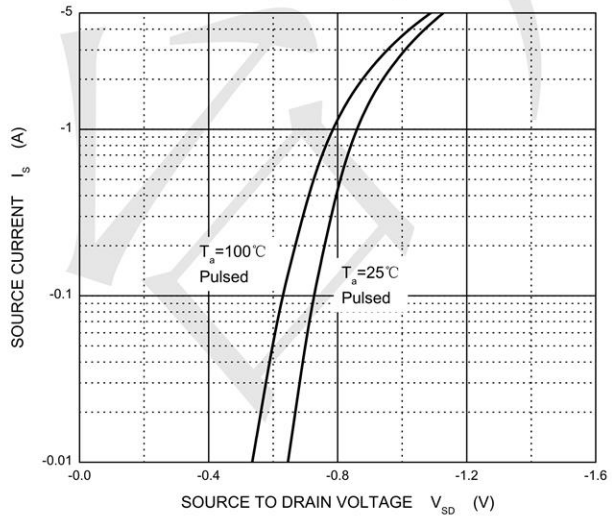
$R_{DS(ON)}$ — I_D



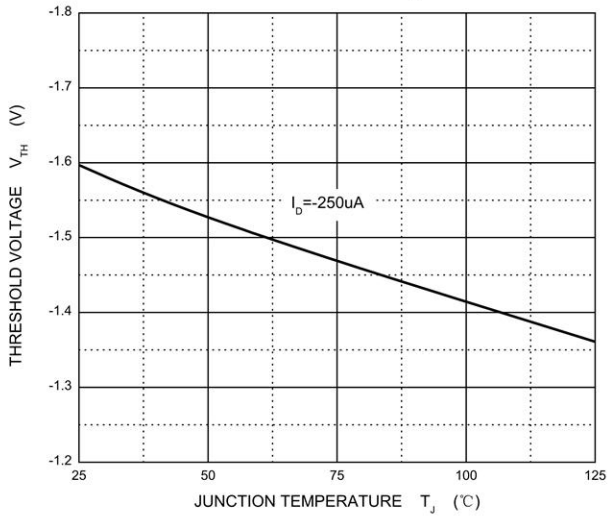
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}

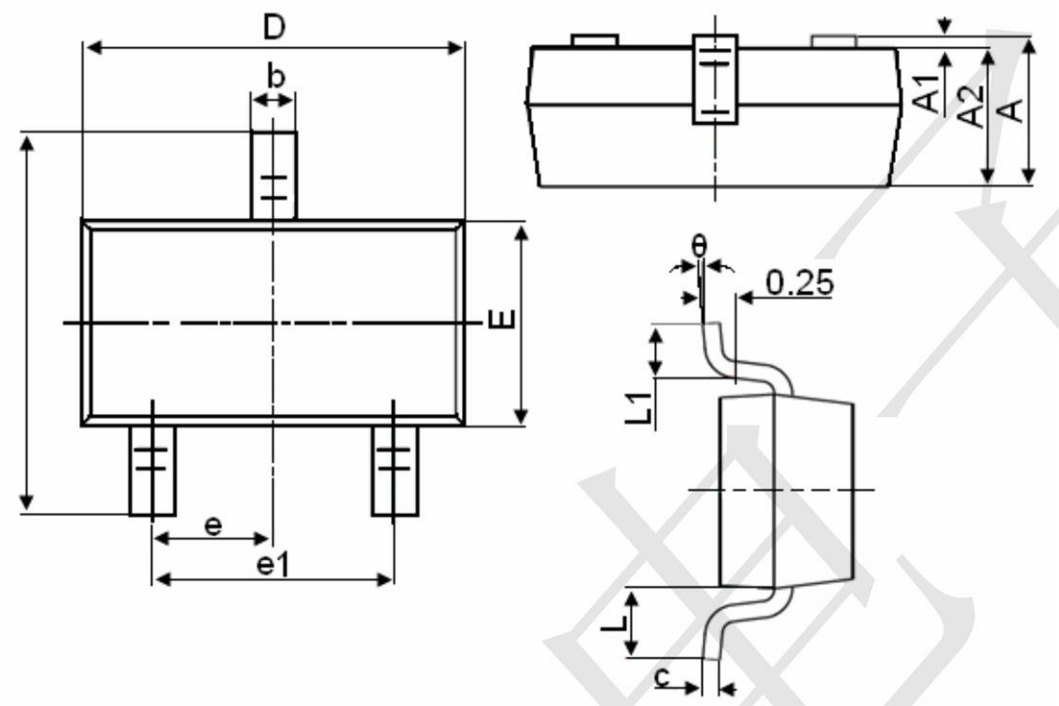


Threshold Voltage



SOT-23 Package Information

(UNIT)：mm



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°