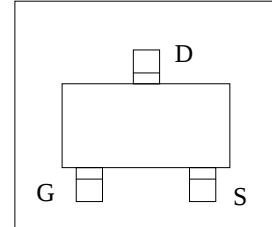
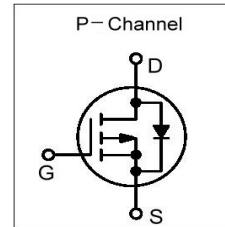


**P-Channel Enhancement Mode Power MOSFET****General Features**

- $V_{DS} = -40V, I_D = -5.3A$
- $R_{DS(ON)} < 120m\Omega @ V_{GS} = -4.5V$
- $R_{DS(ON)} < 85m\Omega @ V_{GS} = -10V$
- High power and current handling capability
- Lead free product is acquired
- Surface mount package

Application

- Battery applications
- Load switch

**SOT-23-3L****Description**

The PTL4105 uses advanced trench technology to provide excellent $R_{DS(ON)}$. This device is suitable for use as a load switch and battery protection applications.

Order Information

Product	Package	Packing
PTL4105	SOT-23-3L	3000PCS/Reel

Absolute Maximum Ratings ($T_A = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	-5.3	A
Drain Current-Pulsed (Note 1)	I_{DM}	-20	A
Maximum Power Dissipation	P_D	2	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^\circ C$
Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	62.5	$^\circ C/W$



P-Channel Enhancement Mode Power MOSFET

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =-250μA	-40	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-40V, V _{GS} =0V	-	-	-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1		-3	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-5A	-	73	85	mΩ
		V _{GS} =-4.5V, I _D =-4A	-	98	120	mΩ
Forward Transconductance	g _{FS}	V _{DS} =-5V, I _D =4.1A	10	-	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C _{iss}	V _{DS} =-20V, V _{GS} =0V, F=1.0MHz	-	650	-	PF
Output Capacitance	C _{oss}		-	90	-	PF
Reverse Transfer Capacitance	C _{rss}		-	70	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =-20V, R _L =2Ω V _{GS} =-10, R _{GEN} =3Ω	-	9	-	nS
Turn-on Rise Time	t _r		-	8	-	nS
Turn-Off Delay Time	t _{d(off)}		-	28	-	nS
Turn-Off Fall Time	t _f		-	10	-	nS
Total Gate Charge	Q _g	V _{DS} =-20V, I _D =-3.1A, V _{GS} =-10V	-	14	-	nC
Gate-Source Charge	Q _{gs}		-	2.9	-	nC
Gate-Drain Charge	Q _{gd}		-	3.8	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V, I _S =-2.5A	-	-	1.2	V
Diode Forward Current (Note 2)	I _S		-	-	-5.3	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

P-Channel Enhancement Mode Power MOSFET

Typical Electrical and Thermal Characteristics

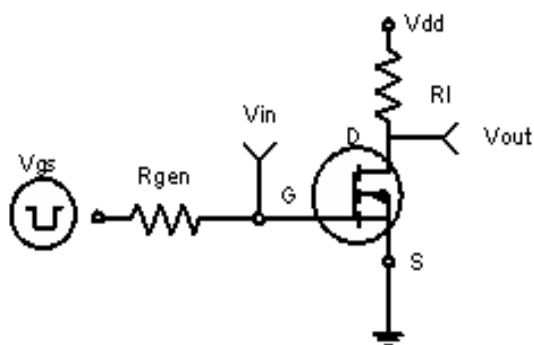


Figure 1: Switching Test Circuit

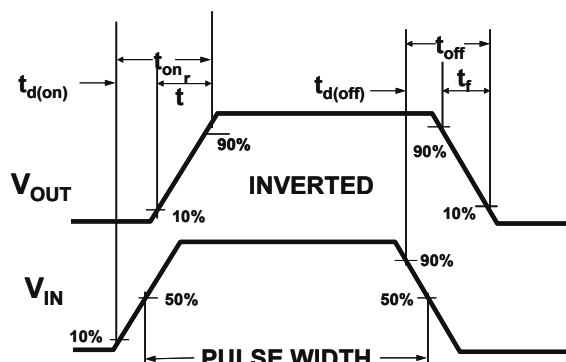


Figure 2: Switching Waveforms

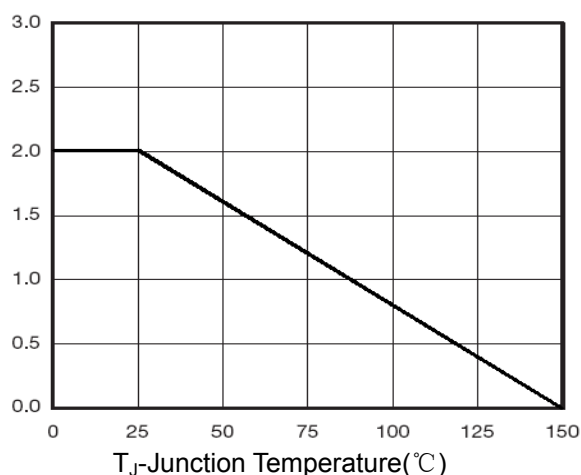


Figure 3 Power Dissipation

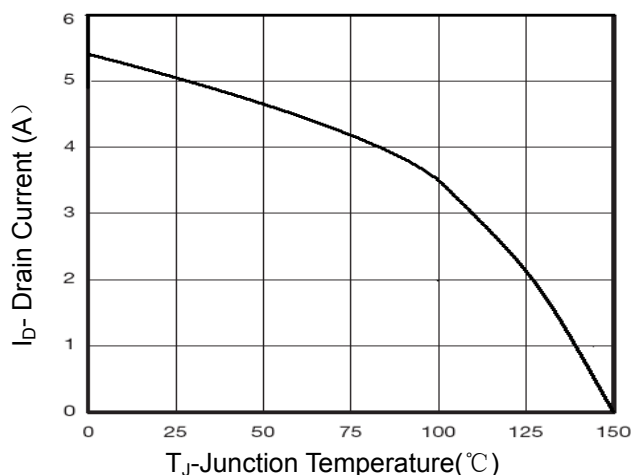


Figure 4 Drain Current

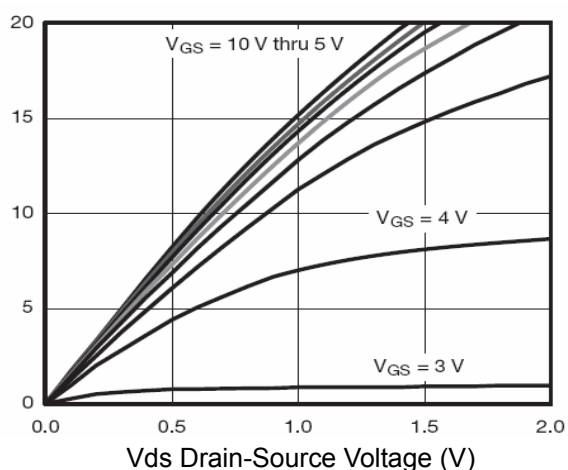


Figure 5 Output Characteristics

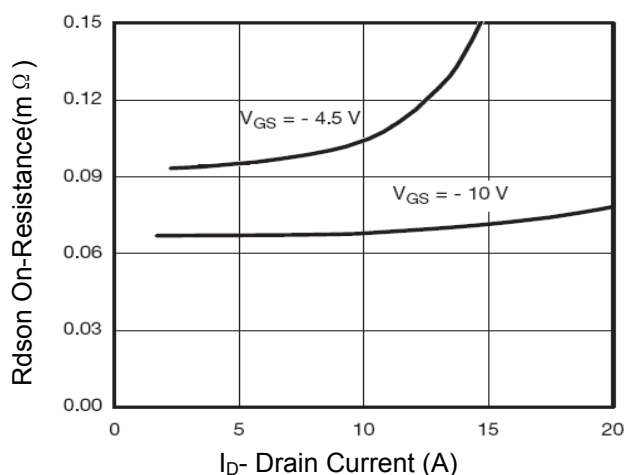


Figure 6 Drain-Source On-Resistance



P-Channel Enhancement Mode Power MOSFET

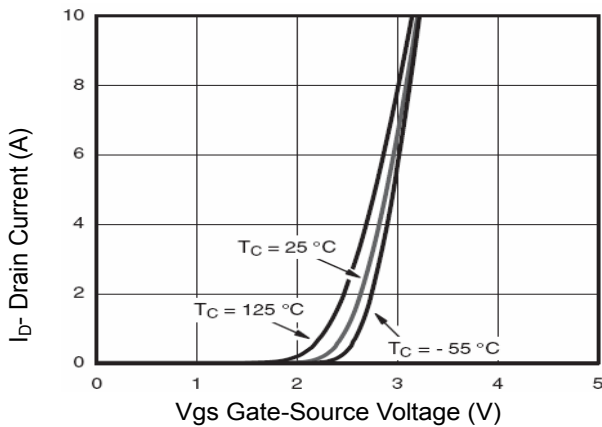


Figure 7 Transfer Characteristics

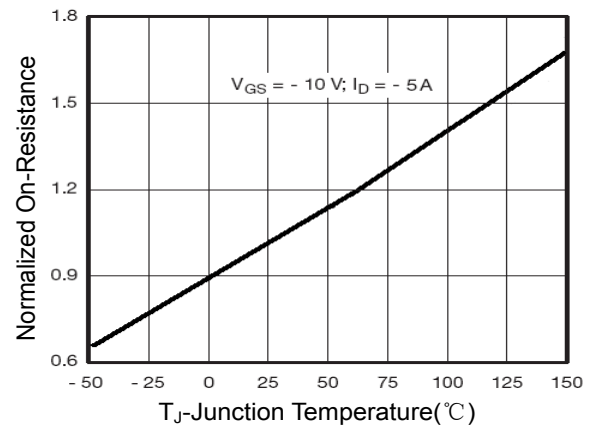


Figure 8 Drain-Source On-Resistance

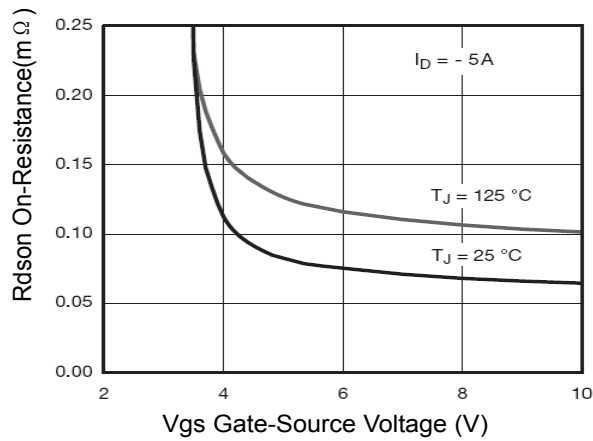
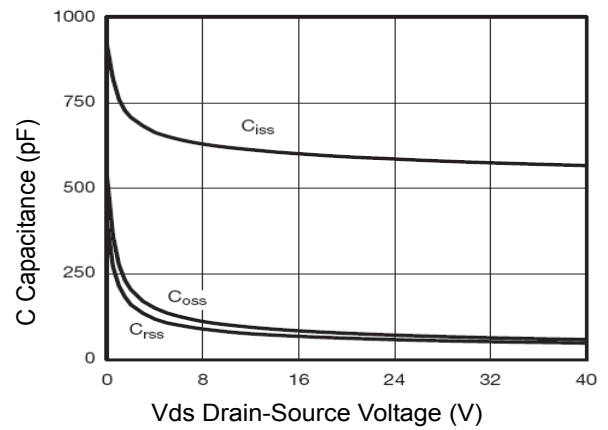
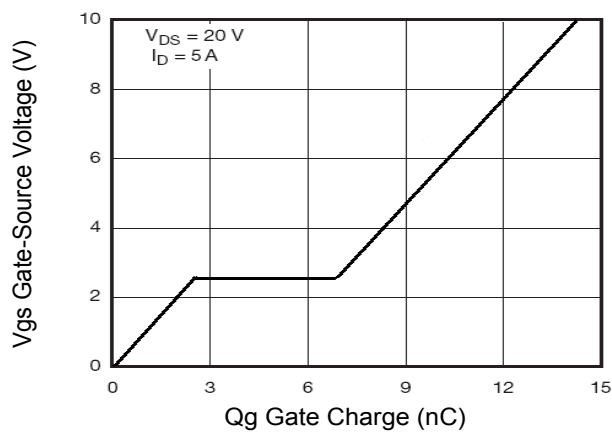
Figure 9 $R_{DS(on)}$ vs V_{GS} Figure 10 Capacitance vs V_{DS} 

Figure 11 Gate Charge

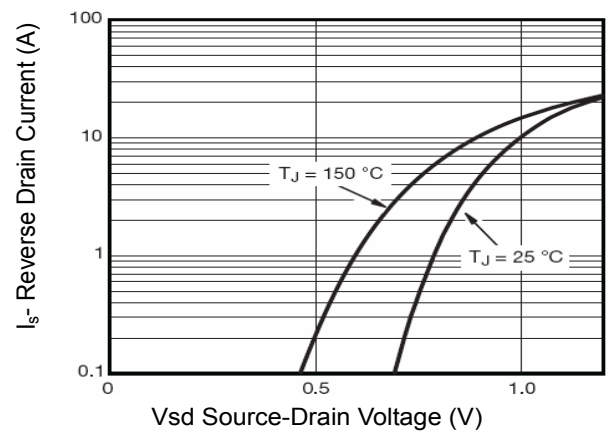


Figure 12 Source- Drain Diode Forward

P-Channel Enhancement Mode Power MOSFET

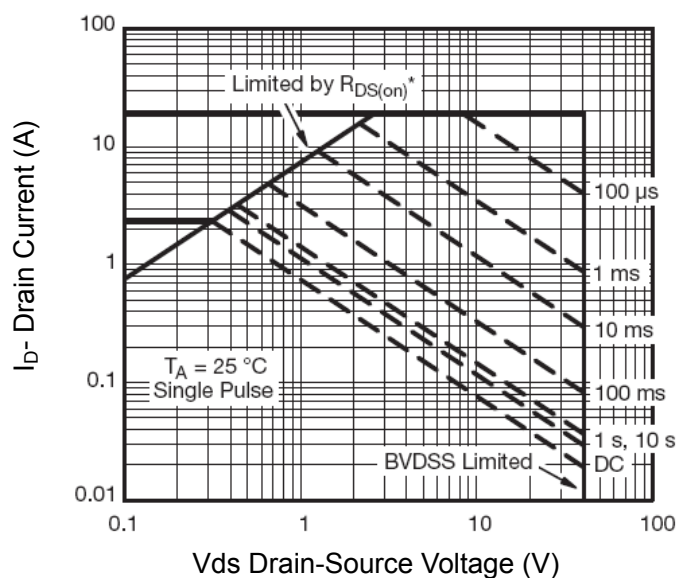


Figure 13 Safe Operation Area

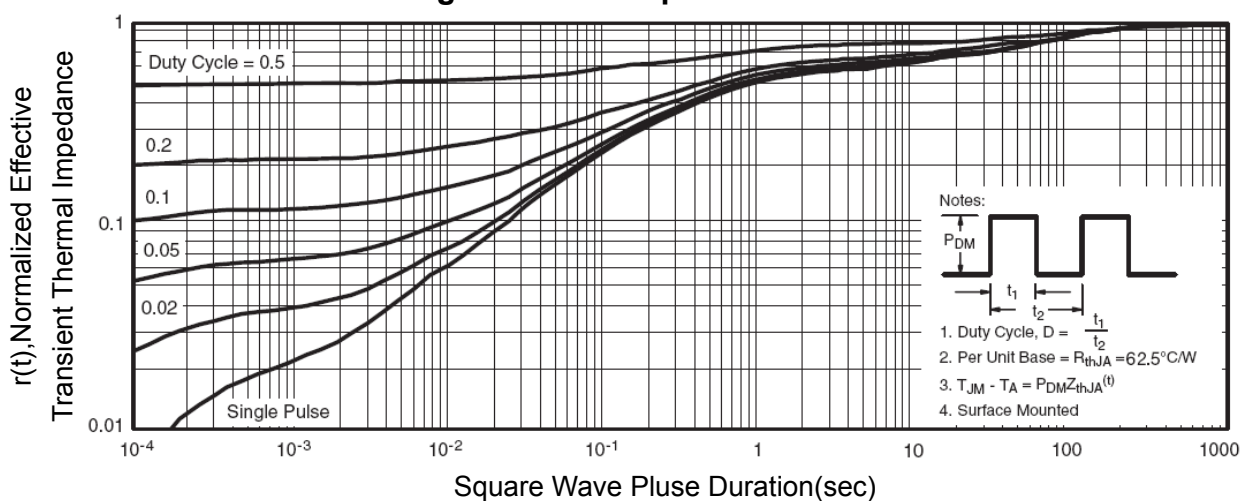
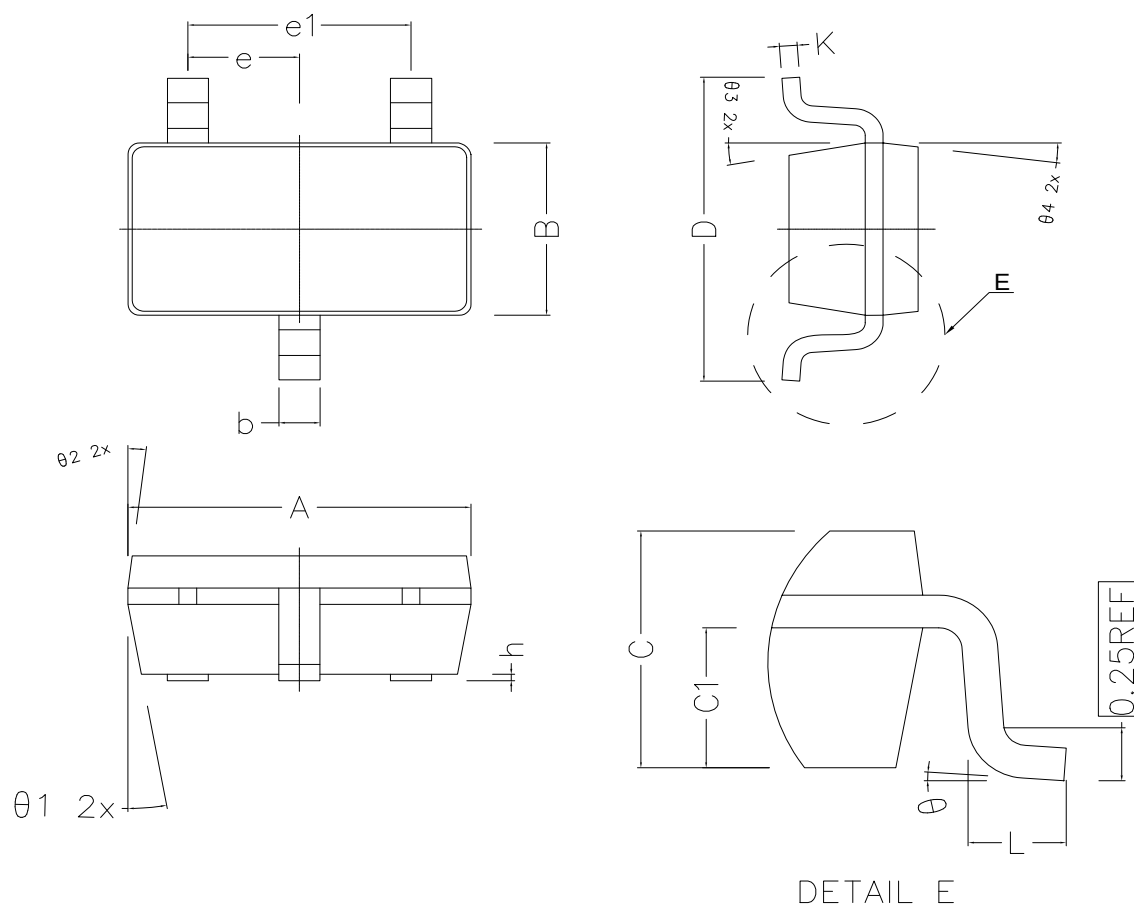


Figure 14 Normalized Maximum Transient Thermal Impedance



SOT-23-3L Package Outline Dimensions (Units: mm)



COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A	2.820	2.920	3.020
B	1.500	1.600	1.700
C	1.050	1.100	1.150
C1	0.600	0.650	0.700
D	2.650	2.800	2.950
L	0.300	0.450	0.600
b	0.280	0.350	0.420
h	0.020	0.050	0.100
K	0.120	—	0.230
e	0.950TYPE		
e1	1.900TYPE		
theta1	10° TYPE		
theta2	7° TYPE		
theta3	10° TYPE		
theta4	7° TYPE		
theta	0° ~ 8°		