

P-Channel Enhancement Mode MOSFET

1. Product Information

Features

- High power and current handing capability
- Lead free product is acquired
- Surface mount package

Applications

- PWM applications
- Load switch
- Power management
- Halogen-free

Quick reference

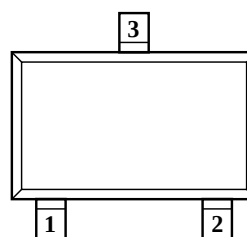
- $B_V \geq -20V$
- $I_D \leq -6.0A$
- $R_{DS(ON)} \leq 20m\Omega$ @ $V_{GS} = -4.5V$ (Type: 17m Ω)
- $R_{DS(ON)} \leq 28m\Omega$ @ $V_{GS} = -2.5V$ (Type: 22m Ω)

Pin Description

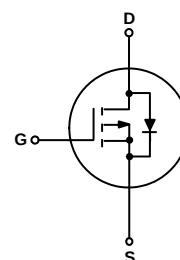
Pin	Description
1	Gate(G)
2	Source(S)
3	Drain(D)

Simplified Outline

Symbol



SOT-23-3L



Package Marking and Ordering Information

Product Name	Package	Marking	Reel Size	Tape width	Quantity
KJ2317A	SOT-23-3L	2317 YWWXXX	YWWXXX: Date Code		3000

2. Absolute Maximum Ratings (TC=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current -Continuous	I_D	-6	A
Drain Current -Pulsed ^(Note 1)	I_{DM}	-24	A
Maximum Power Dissipation	P_D	1.8	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	°C

Thermal Characteristic

Thermal Resistance, Junction-to-Ambient ^(Note 2)	$R_{\theta JA}$	69	°C/W
---	-----------------	----	------

3. Electrical Characteristics (T_J=25°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	-20	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-12V,V _{GS} =0V	-	-	-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±12V,V _{DS} =0V	-	-	±100	nA
On Characteristics ^(Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =-250μA	-0.4	-0.55	-1.0	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-6A	-	17	20	mΩ
		V _{GS} =-2.5V, I _D =-5A	-	22	28	
Forward Transconductance	g _{FS}	V _{DS} =-5V,I _D =-6A		20	-	S
Dynamic Characteristics ^(Note4)						
Input Capacitance	C _{ISS}	V _{DS} =-6V,V _{GS} =0V, F=1.0MHz	-	1730	-	PF
Output Capacitance	C _{OSS}		-	320	-	PF
Reverse Transfer Capacitance	C _{rss}		-	210	-	PF
Switching Characteristics ^(Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =-6V,I _D =-1A , R _L =6Ω,V _{GEN} =-4.5V,R _g =6Ω	-	20	-	nS
Turn-on Rise Time	t _r		-	35	-	nS
Turn-Off Delay Time	t _{d(off)}		-	90	-	nS
Turn-Off Fall Time	t _f		-	70	-	nS
Total Gate Charge	Q _g	V _{DS} =-6V,I _D =-6A,V _{GS} =-4.5V	-	19.5	-	nC
Gate-Source Charge	Q _{gs}		-	4.1	-	nC
Gate-Drain Charge	Q _{gd}		-	5.2	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage ^(Note 3)	V _{SD}	V _{GS} =0V,I _S =-1.0A	-	-	-1.2	V
Diode Forward Current ^(Note 2)	I _S		-	-	-6	A

Notes:

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

4. Typical Characteristics

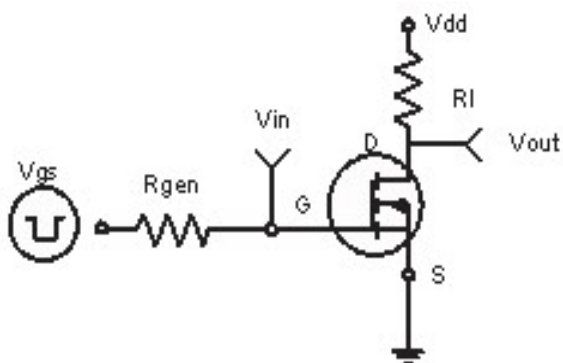


Figure 1: Switching Test Circuit

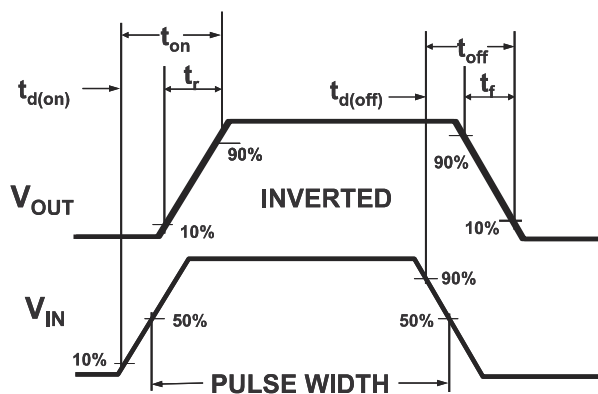
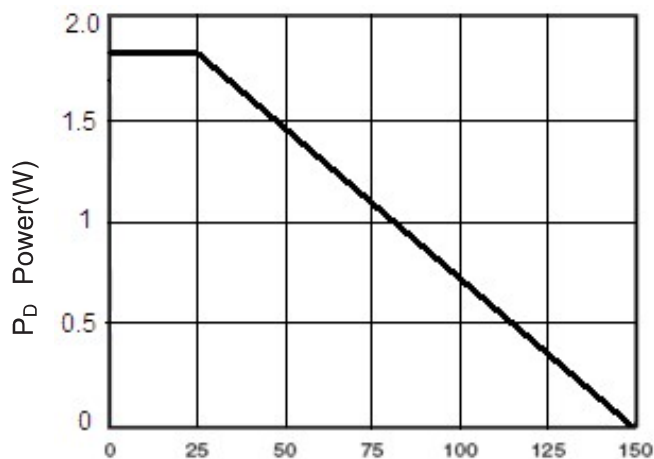
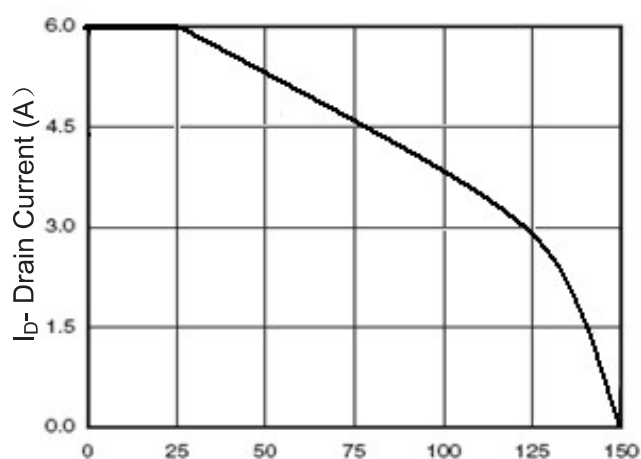


Figure 2: Switching Waveforms



T_J-Junction Temperature(°C)

Figure 3 Power Dissipation



T_J-Junction Temperature(°C)

Figure 4 Drain Current

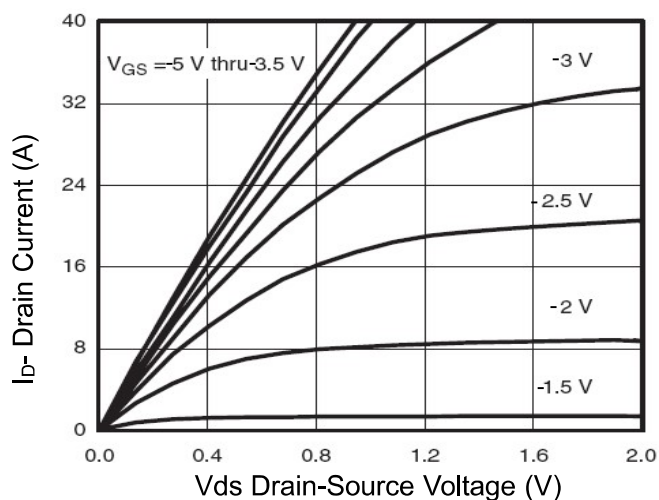


Figure 5 Output Characteristics

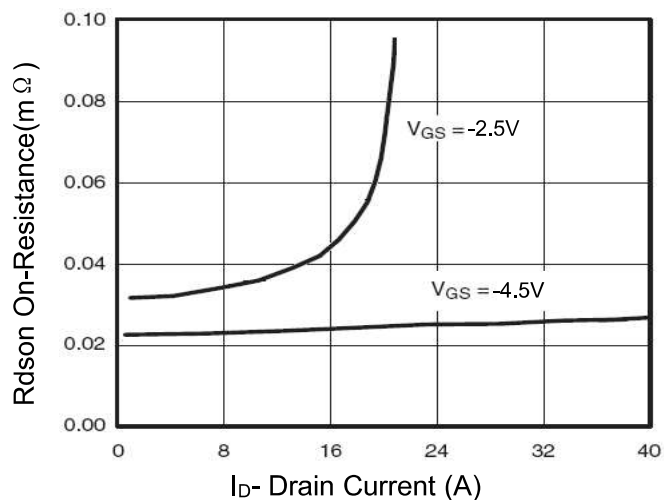


Figure 6 Drain-Source On-Resistance

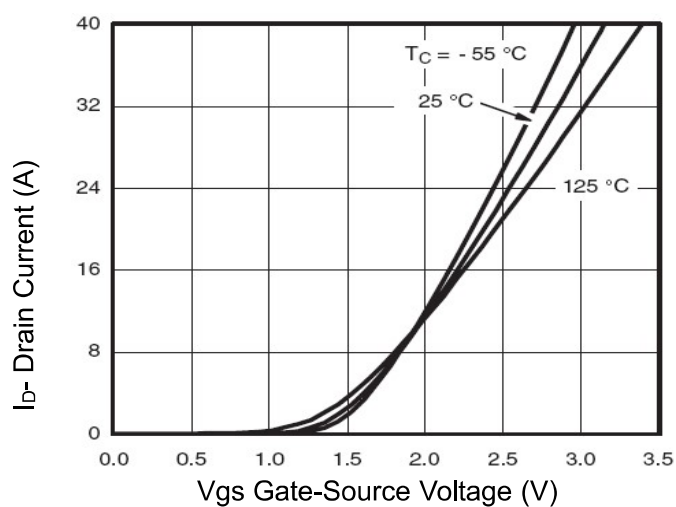


Figure 7 Transfer Characteristics

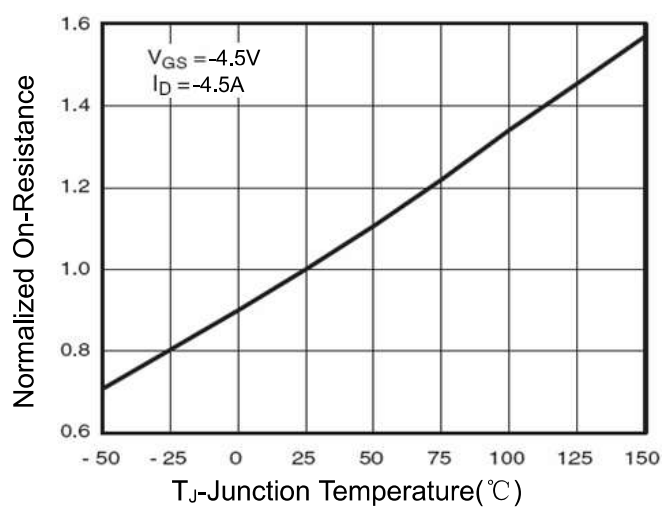


Figure 8 Drain-Source On-Resistance

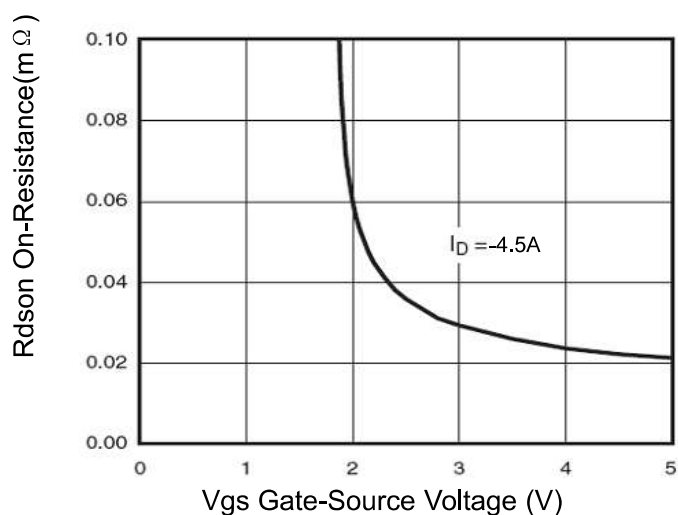


Figure 9 Rdson vs Vgs

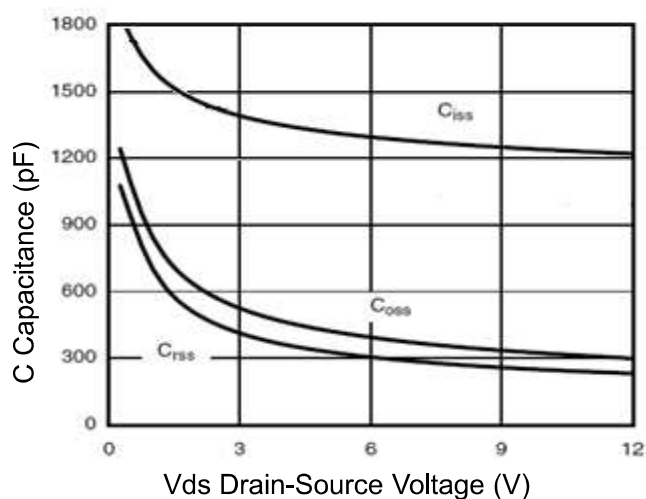


Figure 10 Capacitance vs Vds

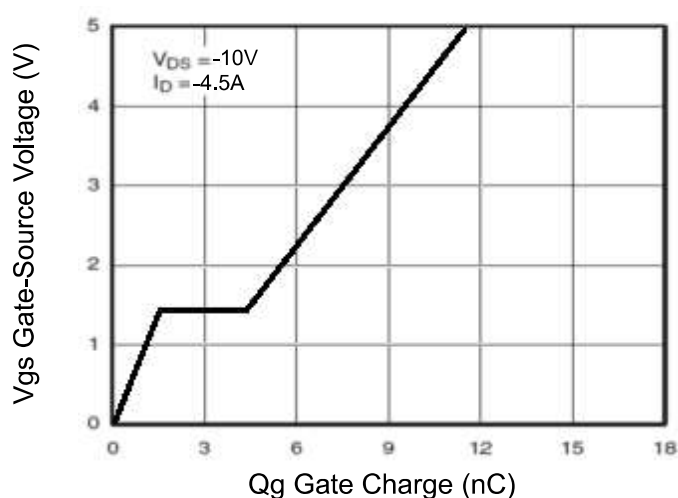


Figure 11 Gate Charge

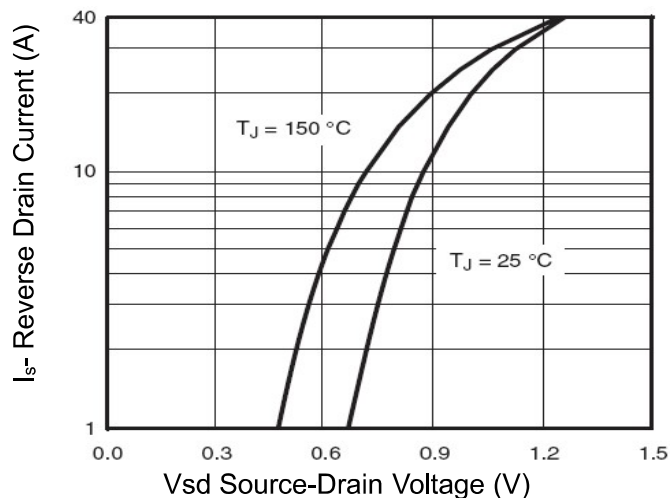


Figure 12 Source- Drain Diode Forward

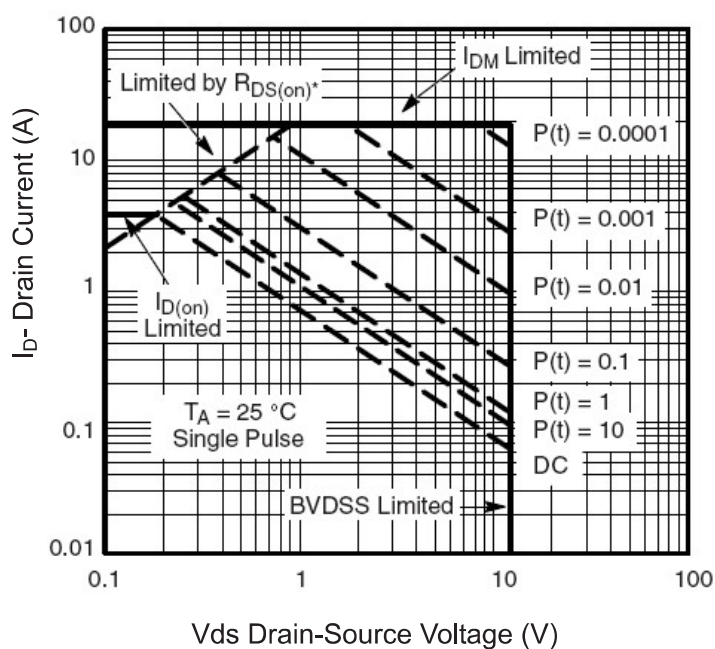


Figure 13 Safe Operation Area

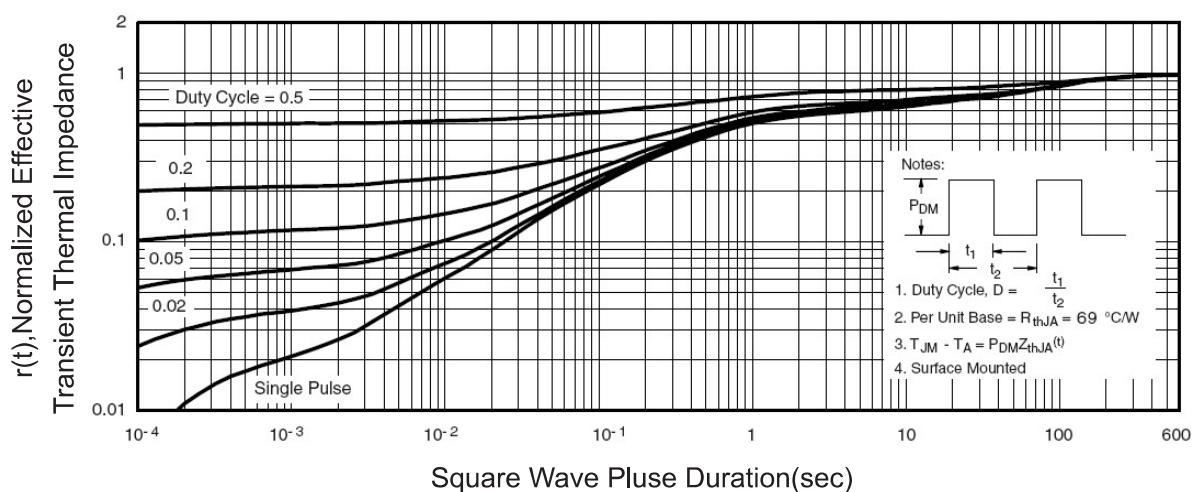
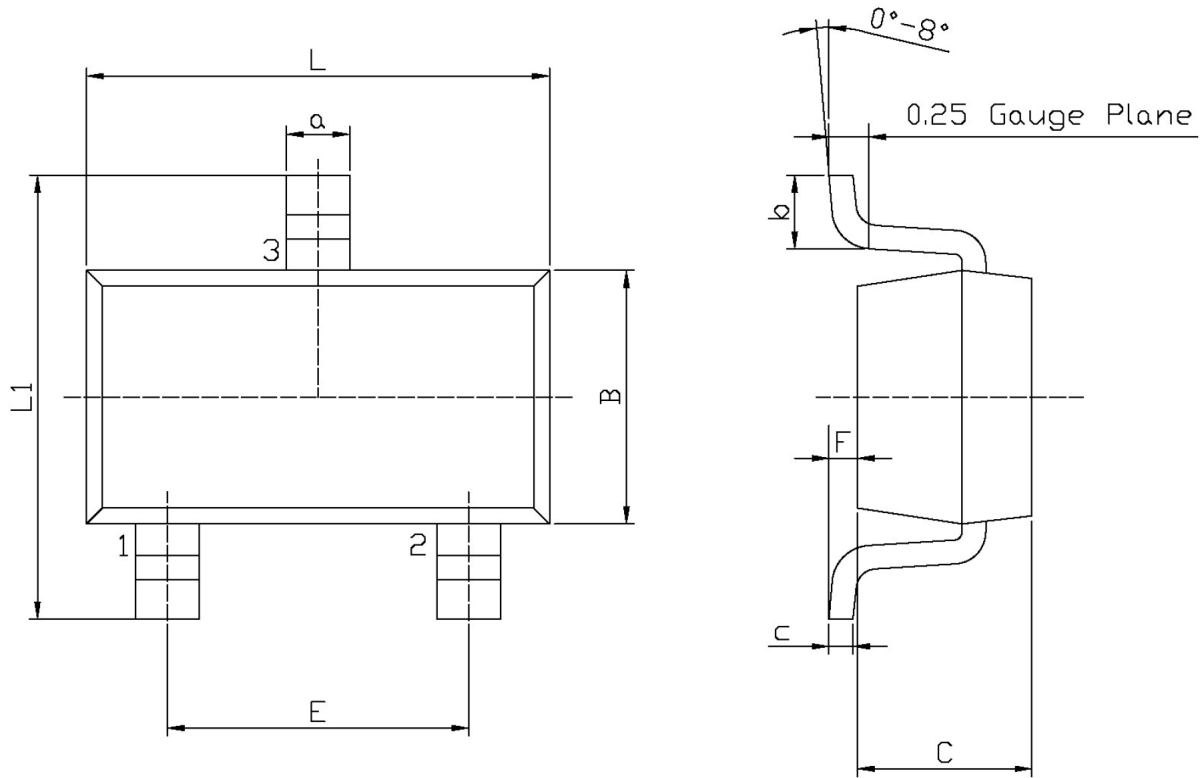


Figure 14 Normalized Maximum Transient Thermal Impedance

5.Package Mechanical Data

SOT-23-3L



Unit: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
L	2.82	3.02	a	0.35	0.50
B	1.50	1.70	c	0.10	0.20
C	0.90	1.30	b	0.35	0.55
L1	2.60	3.00	F	0	0.15
E	1.80	2.00			