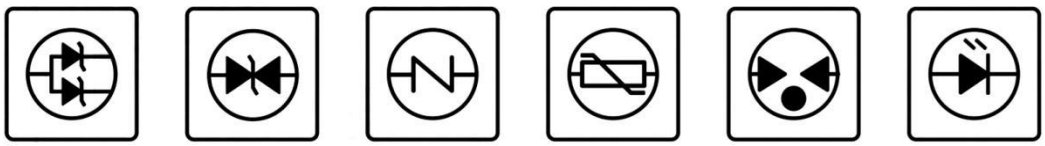
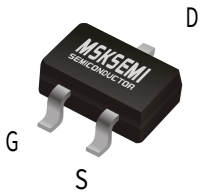
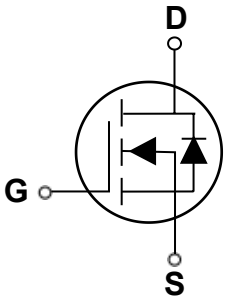
MSKSEMI
SEMICONDUCTOR



Product data sheet



SOT-23-3L



Features

- *30V,6.0A, RDS(ON) =18mΩ @VGS = 1 0V*
- *Improved dv/dt capability*
- *Fast switching*
- *Green Device Available*

Applications

- *MB / VGA / Vcore*
- *Load Switch*
- *Hand-Held Instrument*

BVDSS	RDSON	ID
30V	18mΩ	6.0A

Absolute Maximum Ratings Tc=25 unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current – Continuous (Tc=25℃)	6.0	A
	Drain Current – Continuous (Tc=100℃)	3.8	A
I_{DM}	Drain Current – Pulsed[1]	23	A
P_D	Power Dissipation (Tc=25℃)	1.4	W
	Power Dissipation – Derate above 25℃	0.012	W/℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	80	℃/W

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D =250uA	30	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D =1mA	---	0.04	---	V/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=30V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=24V , V_{GS}=0V , T_J=125℃	---	---	10	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}= ±20V , V_{DS}=0V	---	---	±100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance[3]	V_{GS}=10V , I_D=5.5A	---	18	25	mΩ
		V_{GS}=4.5V , I_D =4A	---	27	40	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.0	1.6	2.5	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-4	---	mV/℃

Dynamic and switching Characteristics

Q_g	Total Gate Charge[3,4]	V_{DS}=15V , V_{GS}=4.5V , I_D =6A	---	4.1	---	nC
Q_{gs}	Gate-Source Charge[3,4]		---	1	---	
Q_{gd}	Gate-Drain Charge[3,4]		---	2.1	---	
$T_{d(on)}$	Turn-On Delay Time[3,4]	V_{DD} =15V , V_{GS}=10V , R_G=6Ω I_D=1A	---	2.8	---	ns
T_r	Rise Time[3,4]		---	7.2	---	
$T_{d(off)}$	Turn-Off Delay Time[3,4]		---	15.8	---	
T_f	Fall Time[3,4]		---	4.6	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , F=1MHz	---	345	---	pF
C_{oss}	Output Capacitance		---	55	---	
C_{rss}	Reverse Transfer Capacitance		---	32	---	

Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D =0V , Force Current	---	---	6.0	A
I_{SM}	Pulsed Source Current[3]		---	---	12	A
V_{SD}	Diode Forward Voltage[3]	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1.2	V
t_{rr}	Reverse Recovery Time	V_{GS}=0V,I_S=1A , di/dt=100A/μs T_J=25℃	---	11	---	ns
Q_{rr}	Reverse Recovery Charge		---	5.0	---	nC

Note :
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=25V,V_{GS}=10V,L=1mH,I_{AS}=8A. ,R_G=25Ω ,Starting T_J=25℃ .
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2% .
4. Essentially independent of operating temperature.

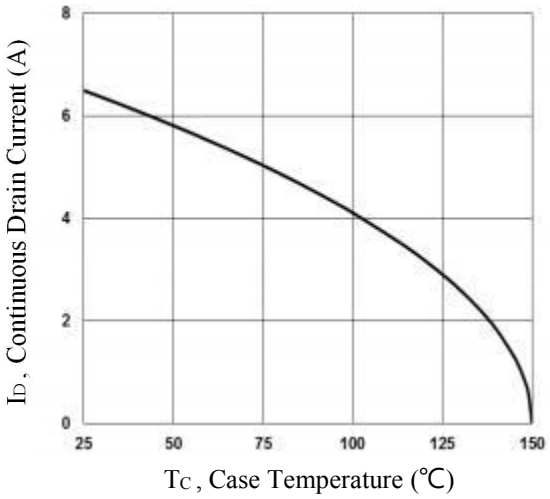


Fig.1 Continuous Drain Current vs. T_C

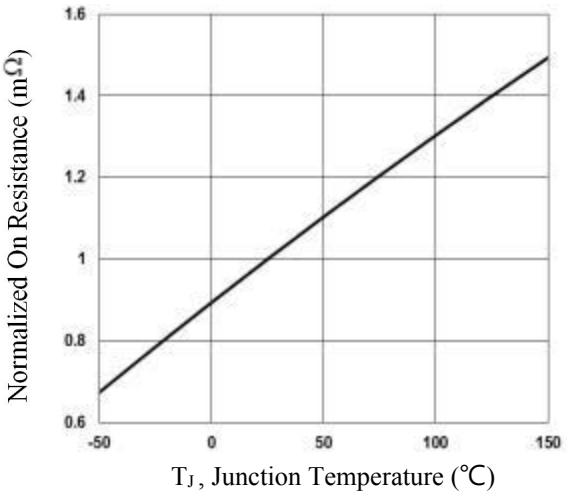


Fig. 2 Normalized RDSON vs. T_J

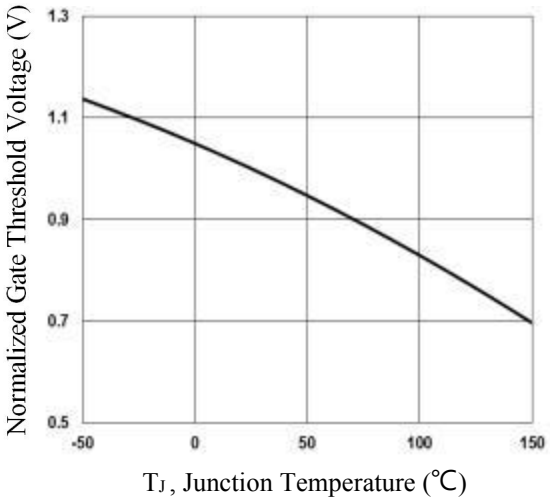


Fig. 3 Normalized V_{th} vs. T_J

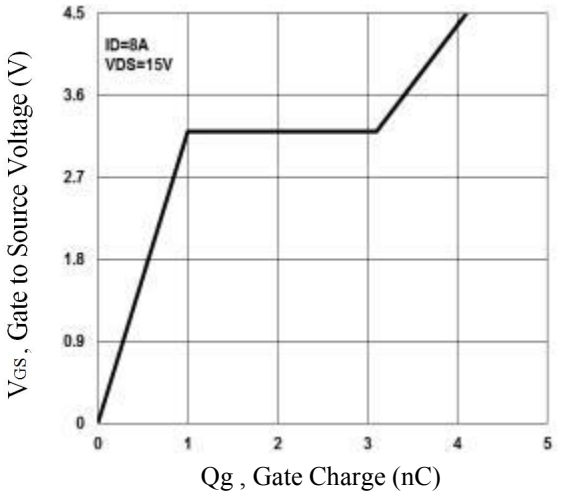


Fig. 4 Gate Charge Waveform

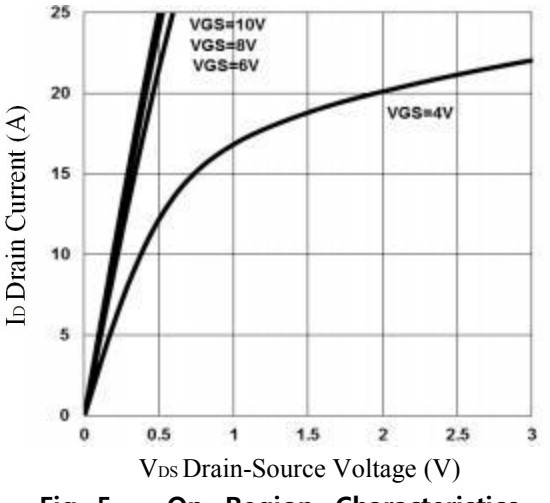


Fig. 5 On Region Characteristics

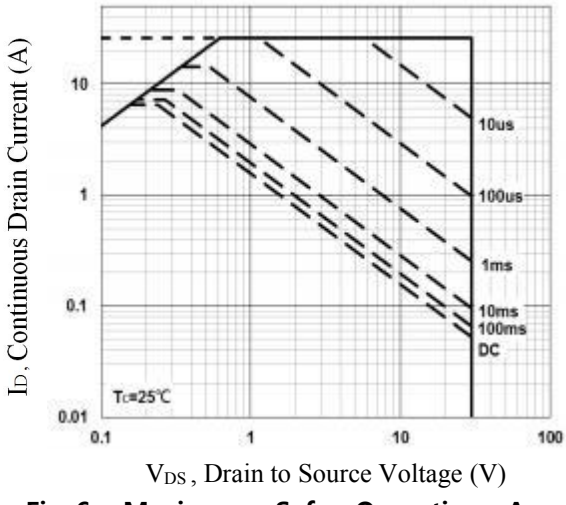


Fig. 6 Maximum Safe Operation Area

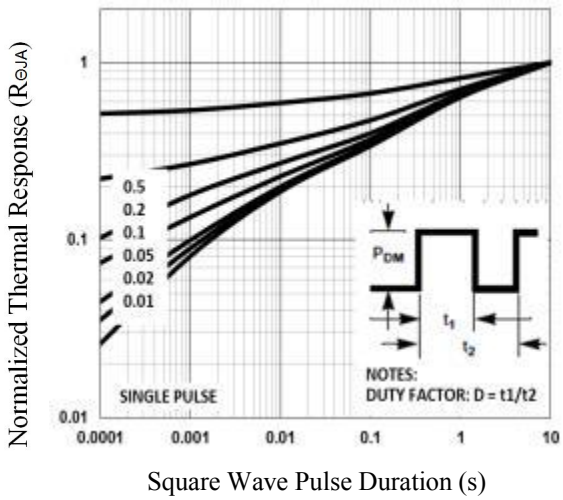


Fig. 7 Normalized Transient Response

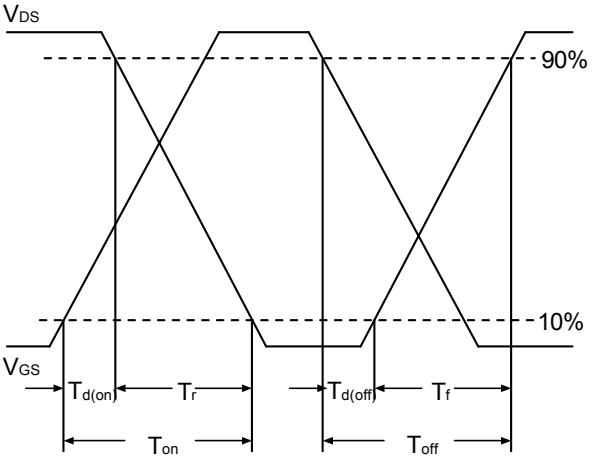
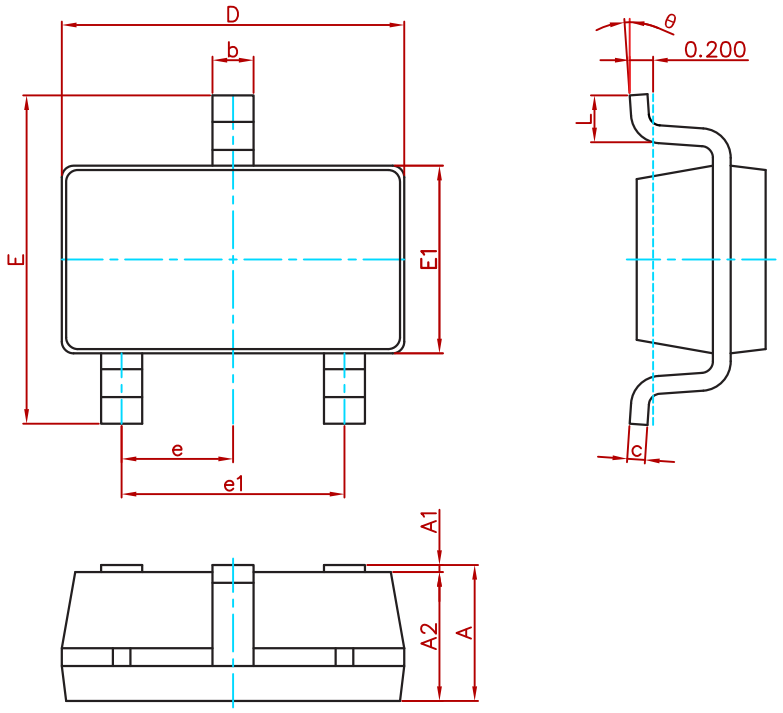


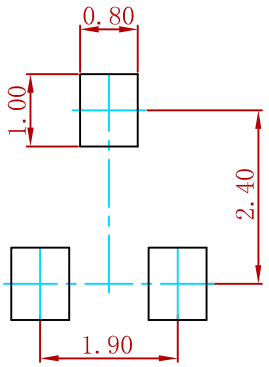
Fig. 8 Switching Time Waveform

PACKAGE MECHANICAL DATA



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

REEL SPECIFICATION

P/N	PKG	QTY
AO3404A	SOT-23-3L	3000

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