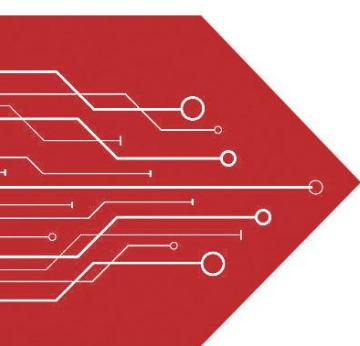


# MSKSEMI

SEMICONDUCTOR



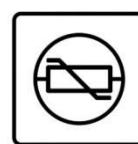
ESD



TVS



TSS



MOV

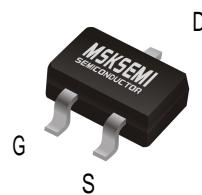


GDT

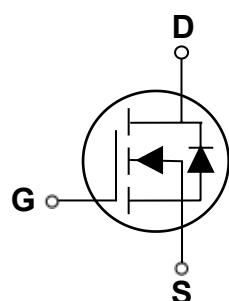


PLED

Product data sheet



SOT-23-3L



## Features

- 100V, 1.3A ,  $RDS(ON)=500m\Omega$  @  $VGS=10V$
- Improved  $dv/dt$  capability
- Fast switching
- Green Device Available

## Applications

- Networking
- Load Switch
- LED applications

BVDSS	RDSON	ID
100V	500mΩ	1.3A

## Absolute Maximum Ratings $Tc=25^{\circ}C$ unless otherwise noted

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain- Source Voltage	100	V
$V_{GS}$	Gate- Source Voltage	$\pm 20$	V
$I_D$	Drain Current – Continuous ( $T_A=25^{\circ}C$ )	1.3	A
	Drain Current – Continuous ( $T_A=70^{\circ}C$ )	1.12	A
$I_{DM}$	Drain Current – Pulsed <sup>1</sup>	5.6	A
$P_D$	Power Dissipation ( $T_A=25^{\circ}C$ )	1.56	W
	Power Dissipation – Derate above 25°C	0.012	W/°C
$T_{STG}$	Storage Temperature Range	-50 to 150	°C
$T_J$	Operating Junction Temperature Range	-50 to 150	°C

## Thermal Characteristics

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

## Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V , I <sub>D</sub> =250uA	100	---	---	V
△BV <sub>DSS</sub> /△T <sub>J</sub>	BV <sub>DSS</sub> Temperature Coefficient	Reference to 25°C , I <sub>D</sub> =1mA	---	0.09	---	V/°C
I <sub>DS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =100V , V <sub>GS</sub> =0V , T <sub>J</sub> =25°C	---	---	1	uA
		V <sub>DS</sub> =80V , V <sub>GS</sub> =0V , T <sub>J</sub> =125°C	---	---	10	uA
I <sub>GS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> = ±20V , V <sub>DS</sub> =0V	---	---	± 100	nA

## On Characteristics

R <sub>DSON</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V , I <sub>D</sub> =1A	---	500	600	mΩ
		V <sub>GS</sub> =4.5V , I <sub>D</sub> =0.5A	---	550	700	mΩ
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	1.2	1.6	2.5	V
			---	-5	---	mV/°C
g <sub>f</sub>	Forward Transconductance	V <sub>DS</sub> =10V , I <sub>D</sub> =1A	---	2.3	---	S

## Dynamic and switching Characteristics

Q <sub>g</sub>	Total Gate Charge <sup>2,3</sup>	V <sub>DS</sub> =50V , V <sub>GS</sub> =10V , I <sub>D</sub> =1A	---	9	---	nC
Q <sub>gs</sub>	Gate-Source Charge <sup>2,3</sup>		---	2.3	---	
Q <sub>gd</sub>	Gate-Drain Charge <sup>2,3</sup>		---	1.1	---	
T <sub>d(on)</sub>	Turn-On Delay Time <sup>2,3</sup>	V <sub>DD</sub> =50V , V <sub>GS</sub> =10V , R <sub>G</sub> =3.3Ω I <sub>D</sub> =1A	---	5.2	---	ns
T <sub>r</sub>	Rise Time <sup>2,3</sup>		---	6.8	---	
T <sub>d(off)</sub>	Turn-Off Delay Time <sup>2,3</sup>		---	14.5	---	
T <sub>f</sub>	Fall Time <sup>2,3</sup>		---	2.1	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V , V <sub>GS</sub> =0V , F=1MHz	---	492	---	pF
C <sub>oss</sub>	Output Capacitance		---	27	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	15	---	

## Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>s</sub>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V , Force Current	---	---	1.3	A
I <sub>SM</sub>	Pulsed Source Current		---	---	2.6	A
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V , I <sub>s</sub> =1A , T <sub>J</sub> =25°C	---	---	1.2	V

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2% .
3. Essentially independent of operating temperature.

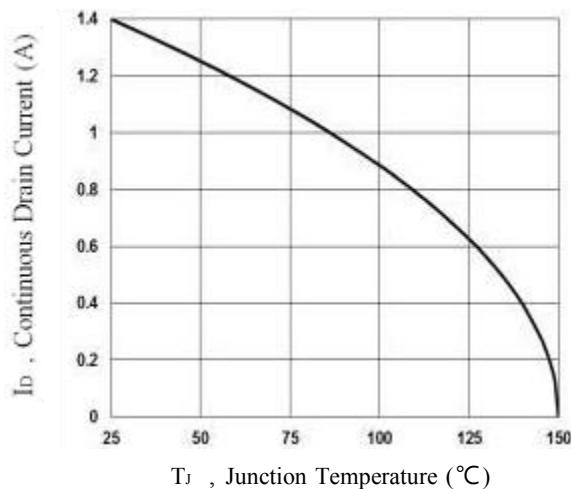


Fig. 1 Continuous Drain Current vs.  $T_J$

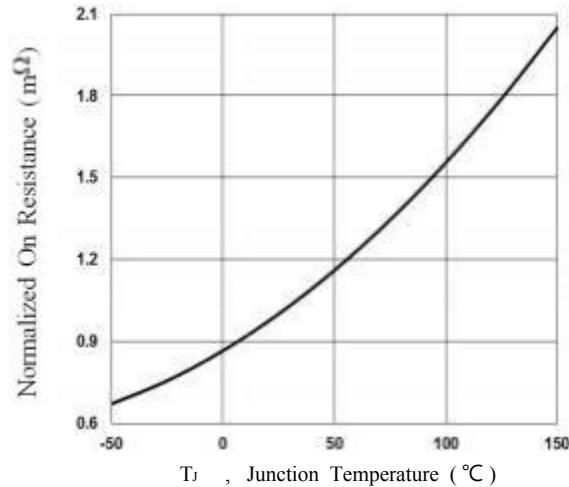


Fig. 2 Normalized RDSON vs.  $T_J$

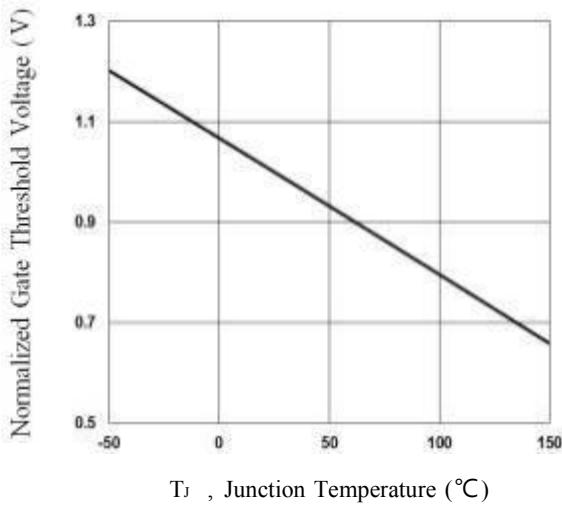


Fig. 3 Normalized  $V_{th}$  vs.  $T_J$

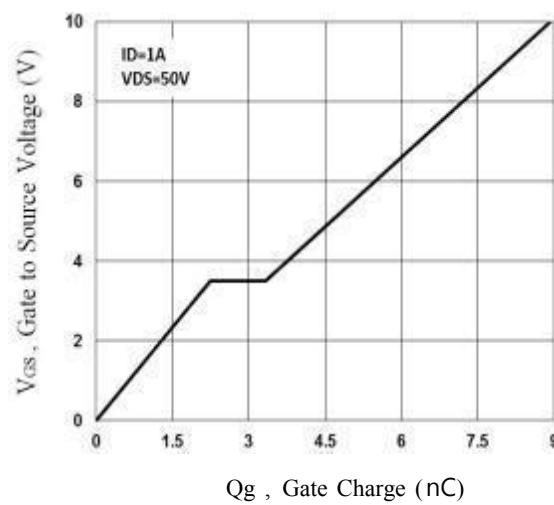


Fig. 4 Gate Charge Waveform

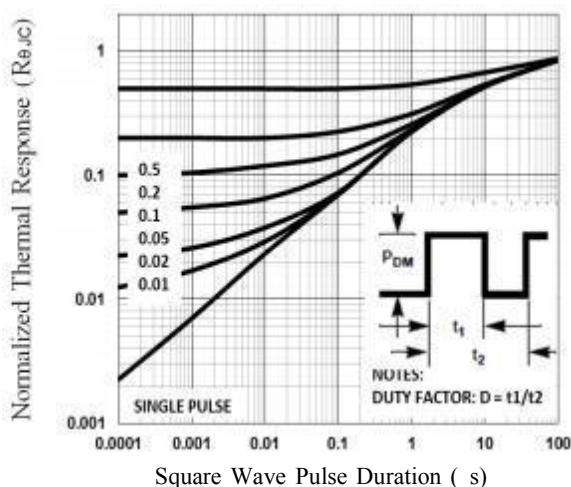


Fig. 5 Normalized Transient Impedance

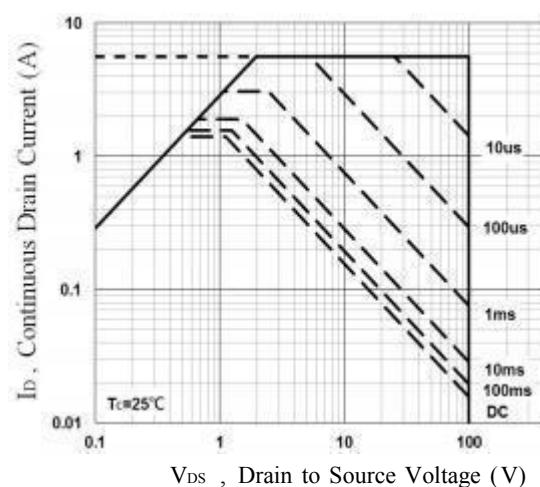


Fig. 6 Maximum Safe Operation Area

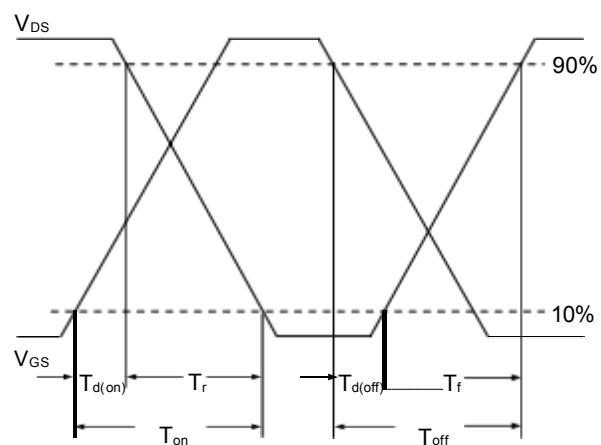


Fig. 7      Switching Time Waveform

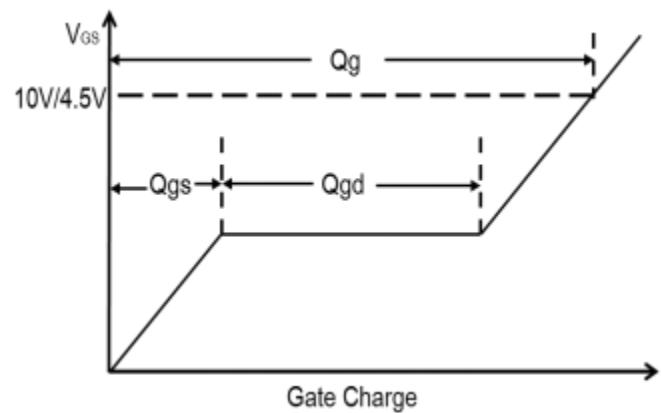
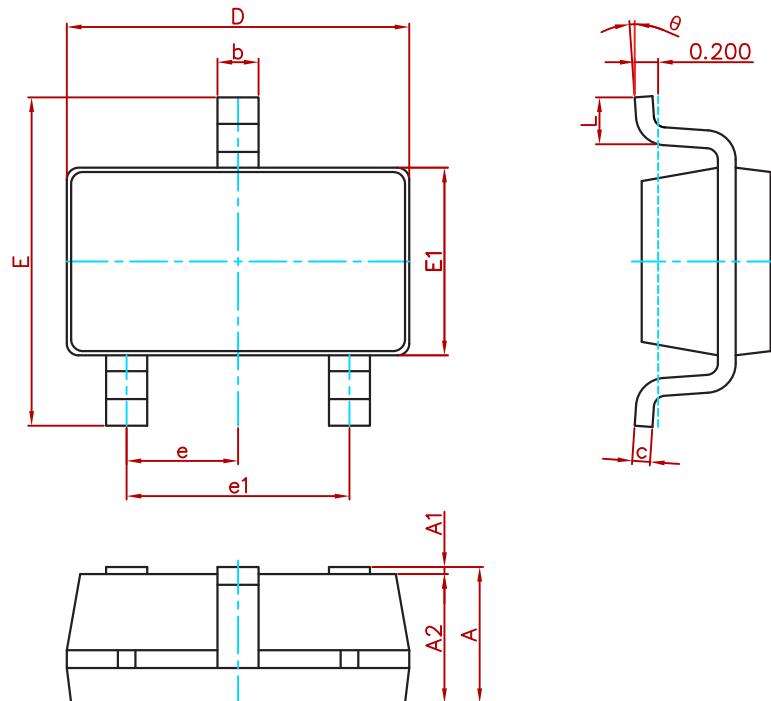
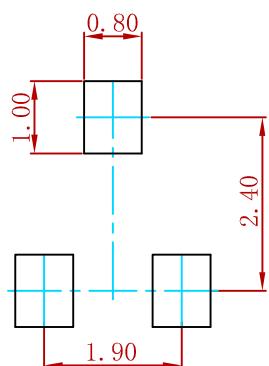


Fig. 8      Gate Charge Waveform

**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:  $\pm 0.05$ mm.  
 3. The pad layout is for reference purposes only.

**REEL SPECIFICATION**

P/N	PKG	QTY
AO3442	SOT-23-3L	3000

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