

MSKSEMI

SEMICONDUCTOR



ESD



TVS



TSS



MOV

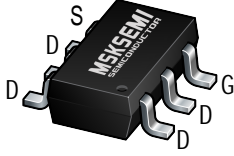


GDT

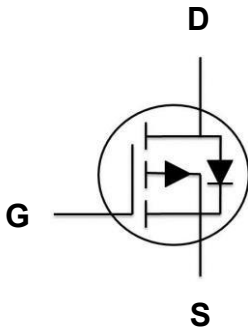


PLED

Product data sheet



SOT-23-6



Features

- -20V, -4.5A, $R_{DS(ON)} = 40m\Omega @ V_{GS} = -4.5V$
- Improved dv/dt capability
- Fast switching
- Green Device Available

Applications

- Notebook
- Load Switch
- Networking

BVDSS	RDSON	ID
-20V	40mΩ	-4.5A

Absolute Maximum Ratings $T_c=25^\circ C$ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Drain Current – Continuous ($T_A=25^\circ C$)	-4.5	A
	Drain Current – Continuous ($T_A=70^\circ C$)	-3.2	A
I_{DM}	Drain Current – Pulsed ¹	-18	A
P_D	Power Dissipation ($T_A=25^\circ C$)	1.56	W
	Power Dissipation – Derate above $25^\circ C$	0.012	W/ $^\circ C$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$

Thermal Characteristics

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

Electrical Characteristics (T_J=25 °C, unless otherwise noted)
Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =-250uA	-20	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-20V , V _{GS} =0V , T _J =25°C	---	---	-1	uA
		V _{DS} =-16V , V _{GS} =0V , T _J =125°C	---	---	-10	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±12V , V _{DS} =0V	---	---	±100	nA

On Characteristics

R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-4.5V , I _D =-3A	---	40	50	mΩ
		V _{GS} =-2.5V , I _D =-2A	---	50	70	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-0.5	-0.65	-1.1	V
g _{fs}	Forward Transconductance	V _{DS} =-10V , I _S =-3A	---	6	---	S

Dynamic and switching Characteristics

Q _g	Total Gate Charge ^{2, 3}	V _{DS} =-10V , V _{GS} =-4.5V , I _D =-2A	---	6.4	---	nC
Q _{gs}	Gate-Source Charge ^{2, 3}		---	0.9	---	
Q _{gd}	Gate-Drain Charge ^{2, 3}		---	1.6	---	
T _{d(on)}	Turn-On Delay Time ^{2, 3}	V _{DD} =-10V , V _{GS} =-4.5V , R _G =6Ω I _D =-2A	---	5	---	nS
T _r	Rise Time ^{2, 3}		---	17.4	---	
T _{d(off)}	Turn-Off Delay Time ^{2, 3}		---	40.7	---	
T _f	Fall Time ^{2, 3}		---	11.4	---	
C _{iss}	Input Capacitance	V _{DS} =-10V , V _{GS} =0V , F=1MHz	---	540	---	pF
C _{oss}	Output Capacitance		---	80	---	
C _{riss}	Reverse Transfer Capacitance		---	75	---	

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	---	---	-4.5	A
I _{SM}	Pulsed Source Current		---	---	-9.0	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _S =-1A , T _J =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.

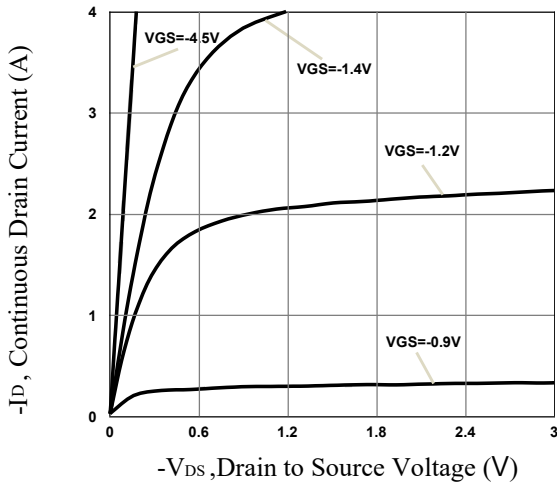


Fig.1 Typical Output Characteristics

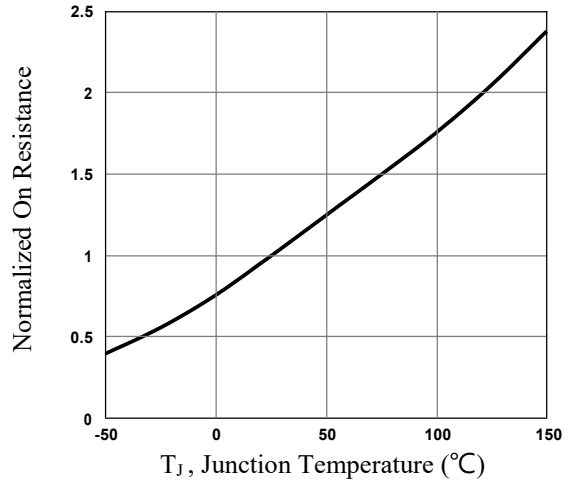


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

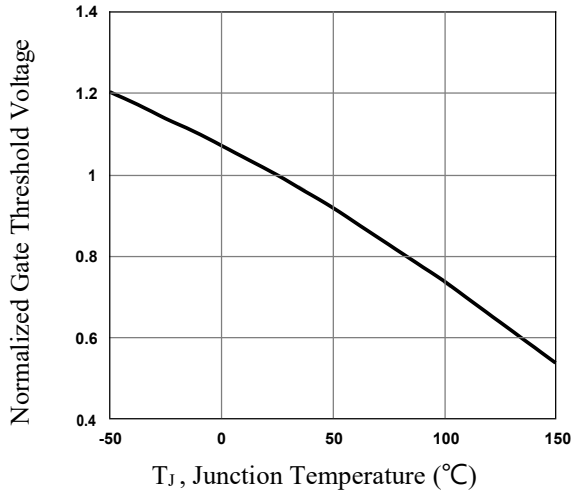


Fig.3 Normalized V_{th} vs. T_J

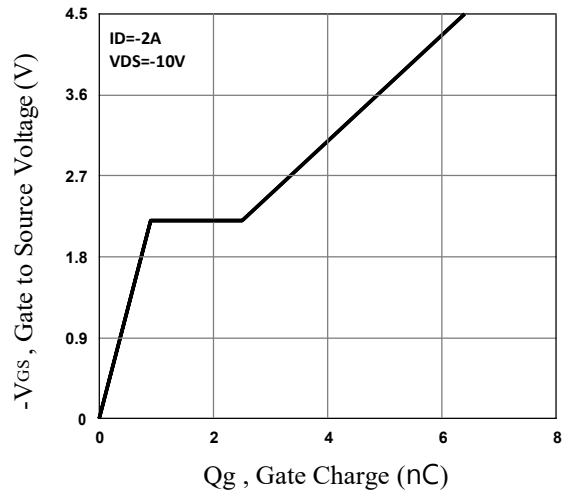


Fig.4 Gate Charge Waveform

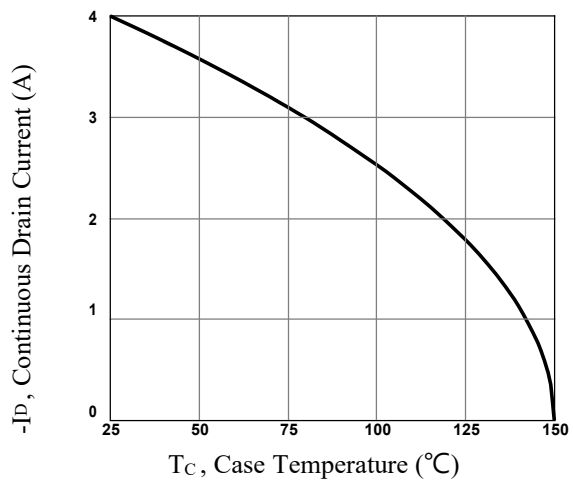


Fig.5 Continuous Drain Current vs. T_C

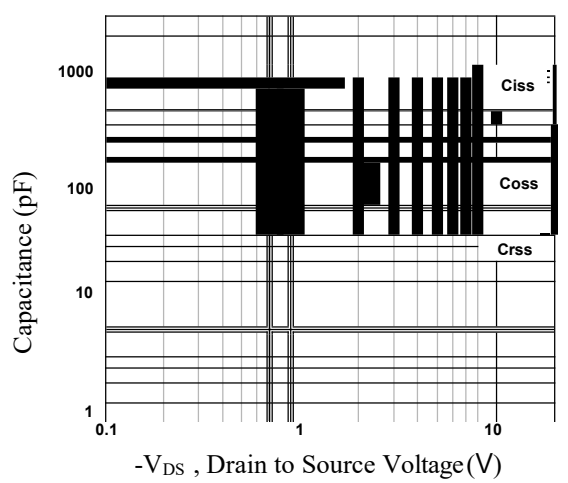


Fig.6 Capacitance Characteristics

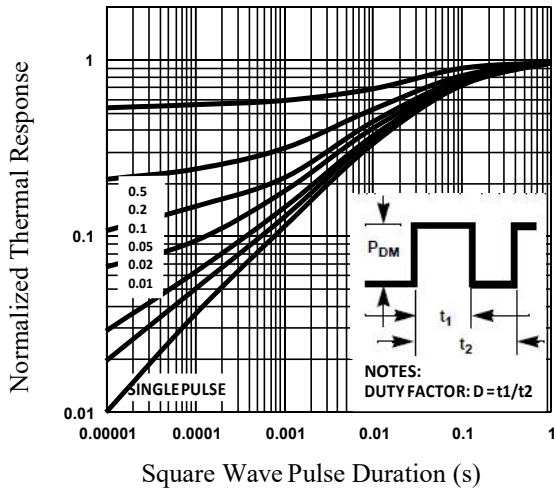
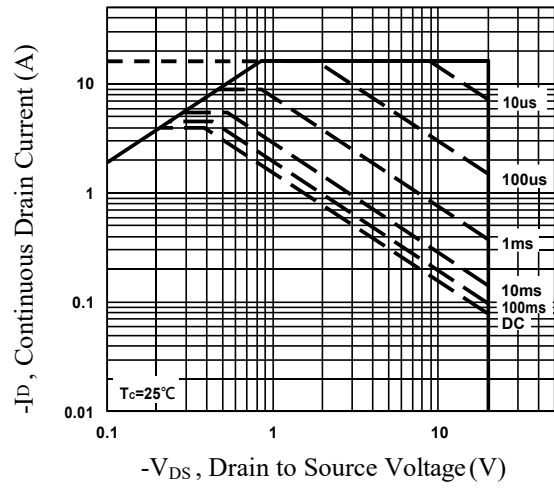
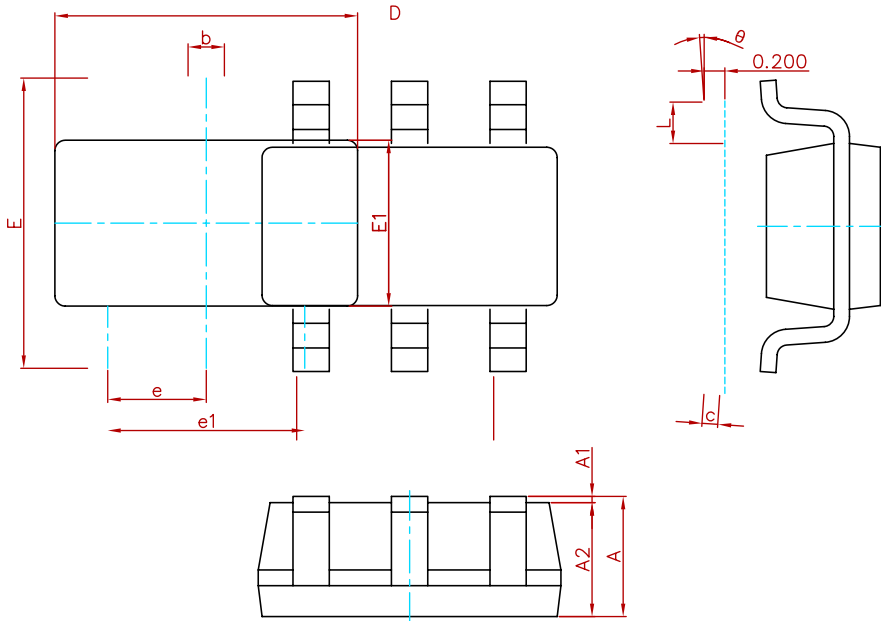


Fig.7 Normalized Transient Impedance

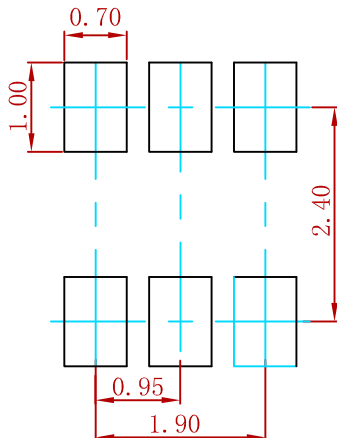


PACKAGE MECHANICAL DATA



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
FDC606P-MS	SOT-23-6	3000

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