

MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

FDC6401N

Product specification

Features

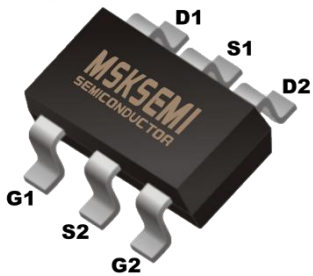
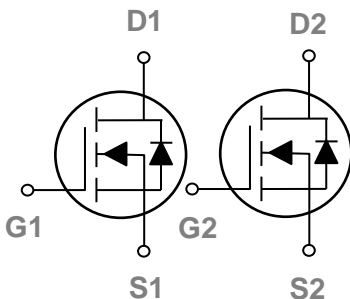

- 20V,4.0A, $R_{DS(ON)} = 22m\Omega @ V_{GS} = 4.5V$
- Fast switching
- Green Device Available

Applications

- Notebook
- Load Switch
- Networking
- Hand-held Instruments

BVDSS	RDSON	ID
20V	22mΩ	4.0A

Reference News

PACKAGE OUTLINE	PIN Configuration	Marking
 <p>SOT-23-6</p>		

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 ($T_A=25^{\circ}C$)	4.0	A
	Drain Current - Continuous ($T_A=70^{\circ}C$)	1.8	A
I_{DM}	Drain Current - Pulsed ¹	16	A
P_D	Power Dissipation ($T_A=25^{\circ}C$)	1.25	W
	Power Dissipation - Derate above $25^{\circ}C$	0.01	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	---	130	$^{\circ}C/W$

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 =4A	---	22	30	mΩ
		V _{GS} =2.5V , I _D =3A	---	25	40	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	0.45	0.8	1.3	V
g _{fs}	Forward Transconductance	V _{DS} =10V , I _D =2A	---	8.9	---	S

Dynamic and switching Characteristics

Q _g	Total Gate Charge ^{2, 3}	V _{DS} =10V , V _{GS} =4.5V , I _D =3A	---	3.2	---	nC
Q _{gs}	Gate-Source Charge ^{2, 3}		---	0.5	---	
Q _{gd}	Gate-Drain Charge ^{2, 3}		---	1.3	---	
T _{d(on)}	Turn-On Delay Time ^{2, 3}	V _{DD} =10V , V _{GS} =4.5V , R _G =6Ω I _D =3A	---	2.9	---	ns
T _r	Rise Time ^{2, 3}		---	8.4	---	
T _{d(off)}	Turn-Off Delay Time ^{2, 3}		---	19.2	---	
T _f	Fall Time ^{2, 3}		---	5.6	---	
C _{iss}	Input Capacitance	V _{DS} =10V , V _{GS} =0V , F=1MHz	---	280	---	pF
C _{oss}	Output Capacitance		---	50	---	
C _{rss}	Reverse Transfer Capacitance		---	45	---	

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	---	---	4.0	A
I _{SM}	Pulsed Source Current		---	---	8.0	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.

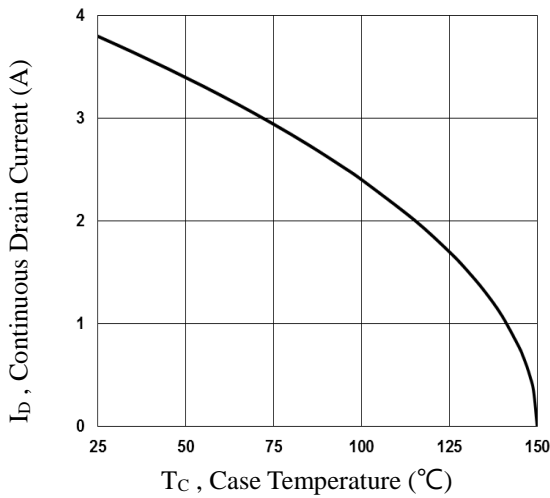


Fig.1 Continuous Drain Current vs. T_c

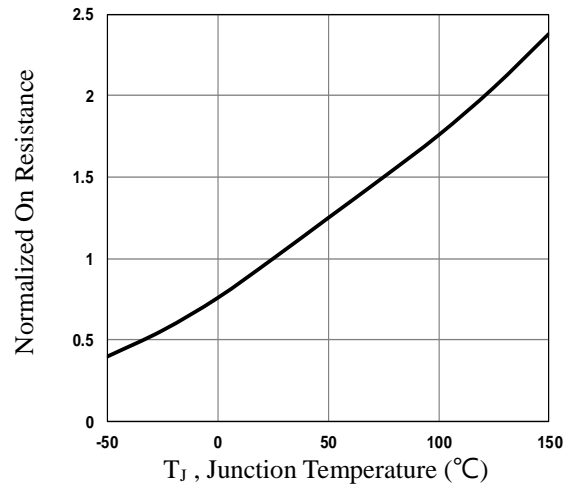


Fig.2 Normalized $R_{DS(on)}$ vs. T_j

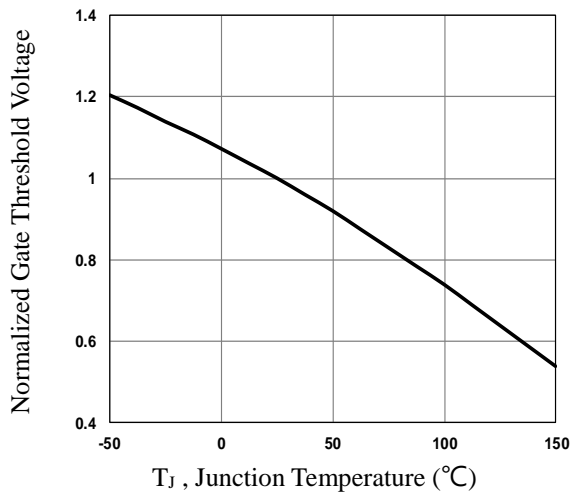


Fig.3 Normalized V_{th} vs. T_j

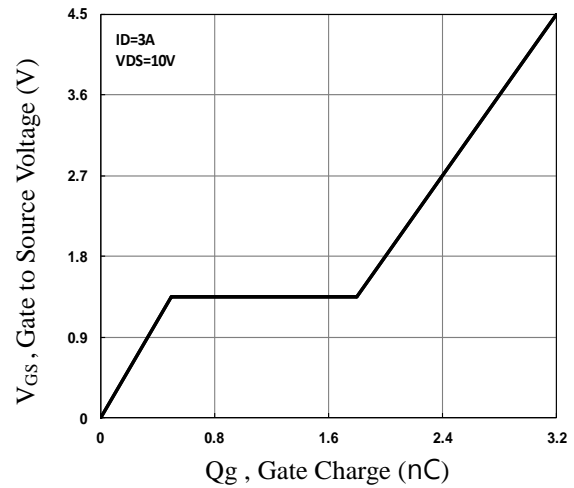


Fig.4 Gate Charge Waveform

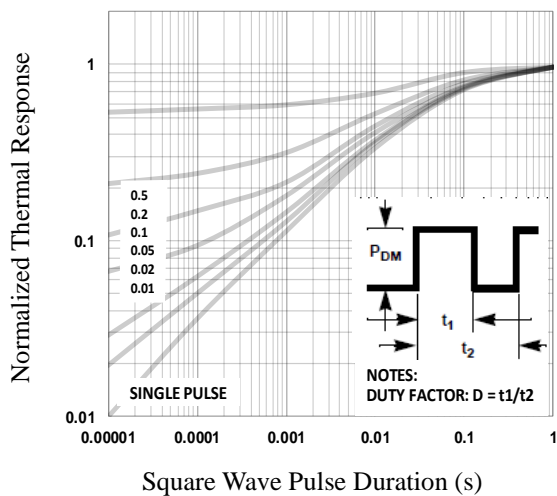


Fig.5 Normalized Transient Impedance

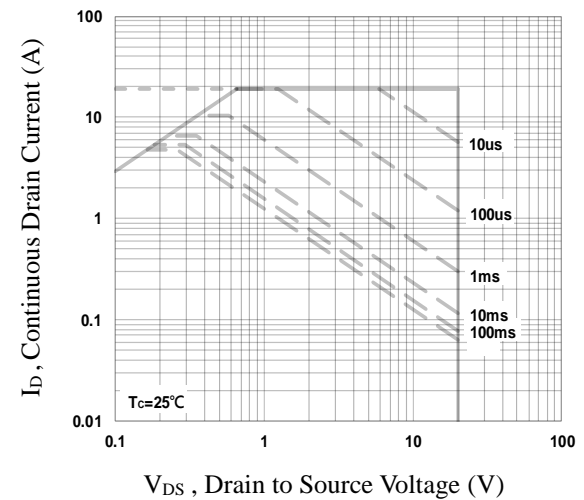
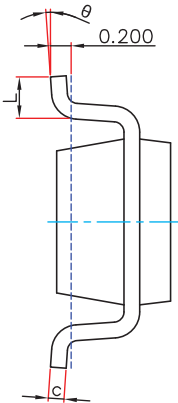
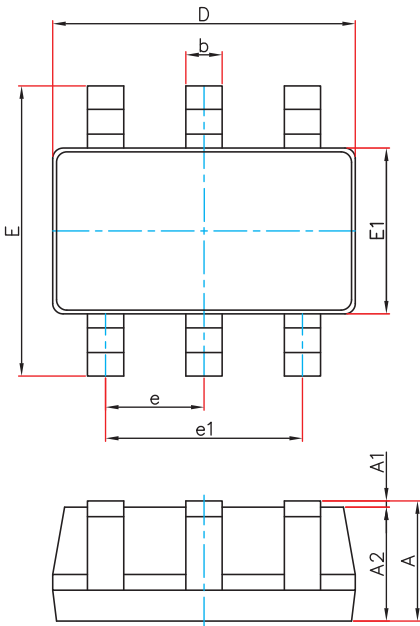


Fig.6 Maximum Safe Operation Area

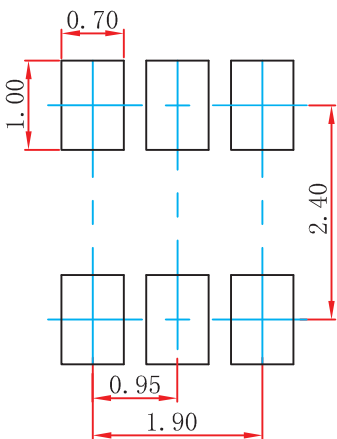
SOT-23-6 Package Outline Dimensions



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°

M 2012 P A

SOT-23-6 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
FDC6401N	SOT-23-6	3000

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