MSKSEMI 美森科
SEMICONDUCTOR

ESD TVS TSS MOV GDT PLED

MS3134KDFN

Product specification

Features
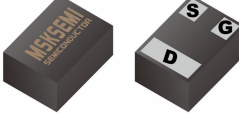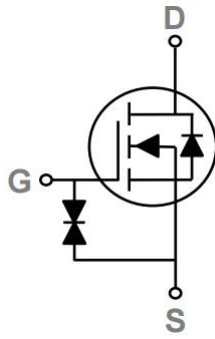
- 20V,750mA, RDS(ON) =200mΩ@VGS = 4.5V
- Fast switching
- Green Device Available
- 2KV HBM ESD Capability

Application

- Notebook
- Smartphone
- Battery Protection
- Hand-held Instruments

BVDSS	RDSON	ID
20V	200mΩ	750mA

Reference News

PACKAGE OUTLINE	Pin Configuration	Marking
DFN1006-3		

Absolute Maximum Ratings Tc=25℃ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±10	V
I_D	Drain Current - Continuous (T_A=25℃)	750	mA
	Drain Current - Continuous (T_A=70℃)	400	mA
I_{DM}	Drain Current - Pulsed[1]	2000	mA
P_D	Power Dissipation (T_A=25℃)	155	mW
	Power Dissipation - Derate above 25℃	1.25	mW/℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 125	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{θJA}$	Thermal Resistance Junction to ambient	---	800	℃/W

Electrical Characteristics (TJ=25 ℃, 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
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	-0.01	---	V/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=20V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=16V , V_{GS}=0V , T_J=125℃	---	---	10	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}= ±10V , V_{DS}=0V	---	---	±10	uA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=4.5V , I_D=0.5A	---	200	350	mΩ
		V_{GS}=2.5V , I_D=0.4A	---	235	450	
		V_{GS}=1.8V , I_D=0.2A	---	295	700	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	0.3	0.5	0.8	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	3	---	mV/℃

Dynamic and switching Characteristics

Q_g	Total Gate Charge[2,3]	V_{DS}=10V , V_{GS}=4.5V , I_D=0.5A	---	1	---	nC
Q_{gs}	Gate-Source Charge[2,3]		---	0.26	---	
Q_{gd}	Gate-Drain Charge[2,3]		---	0.2	---	
$T_{d(on)}$	Turn-On Delay Time[2,3]	V_{DD}=10V , V_{GS}=4.5V , R_G=10Ω I_D=0.5A	---	5	---	ns
T_r	Rise Time[2,3]		---	3.5	---	
$T_{d(off)}$	Turn-Off Delay Time[2,3]		---	14	---	
T_f	Fall Time[2,3]		---	6	---	
C_{iss}	Input Capacitance	V_{DS}=10V , V_{GS}=0V , F=1MHz	---	38.2	---	pF
C_{oss}	Output Capacitance		---	14.4	---	
C_{rss}	Reverse Transfer Capacitance		---	6	---	

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	---	---	750	mA
I_{SM}	Pulsed Source Current		---	---	1000	mA
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=0.5A , T_J=25℃	---	---	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%.
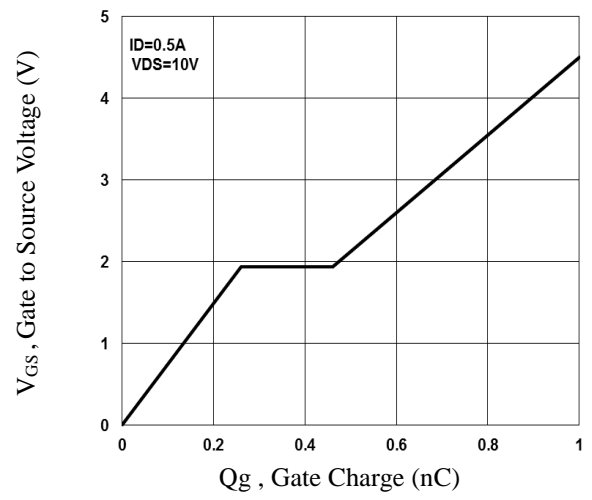3. Essentially independent of operating temperature.
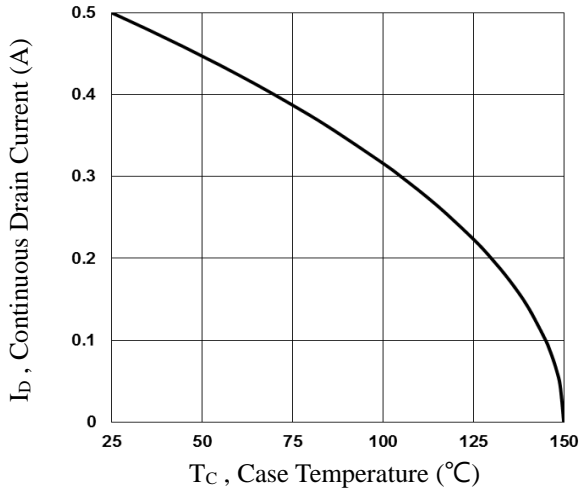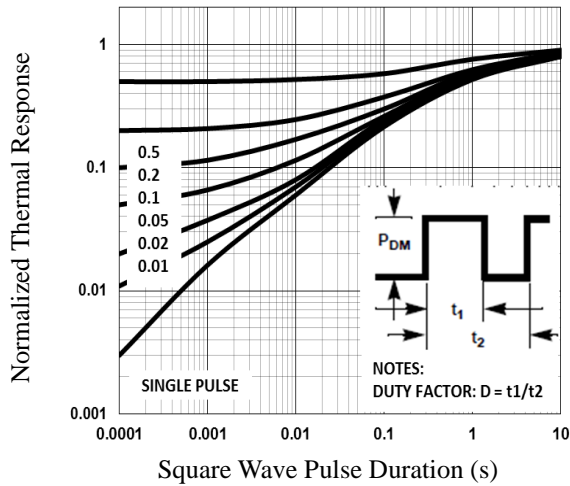
Fig.1   Continuous Drain Current vs. T_C
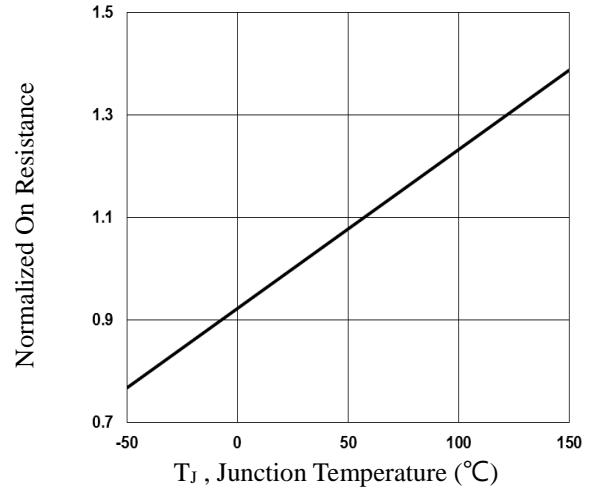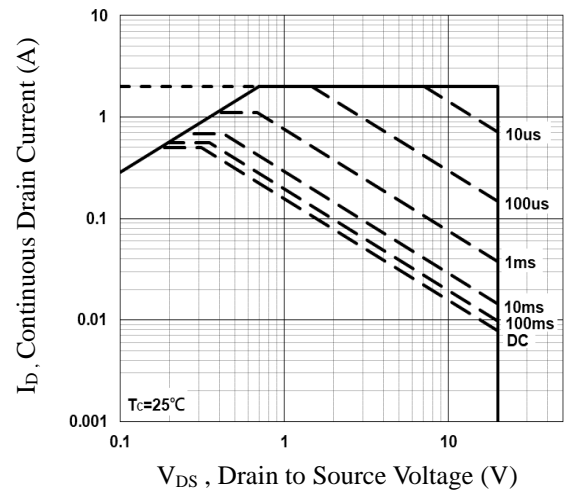

Fig.2   Normalized RDSON vs. T_J
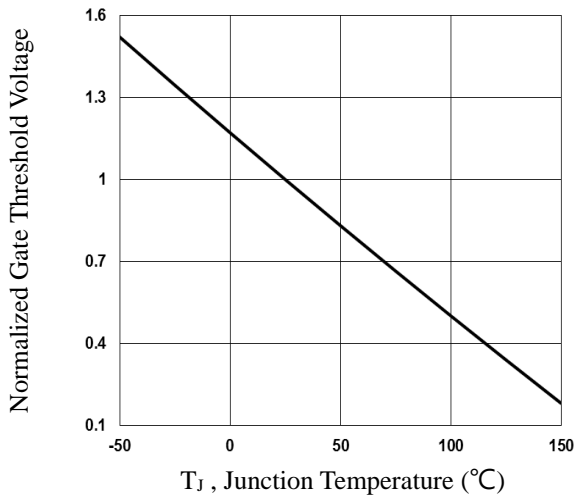
Fig.3   Normalized V_{th} vs. T_J
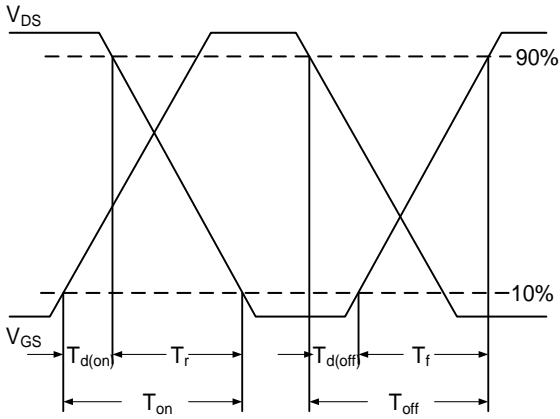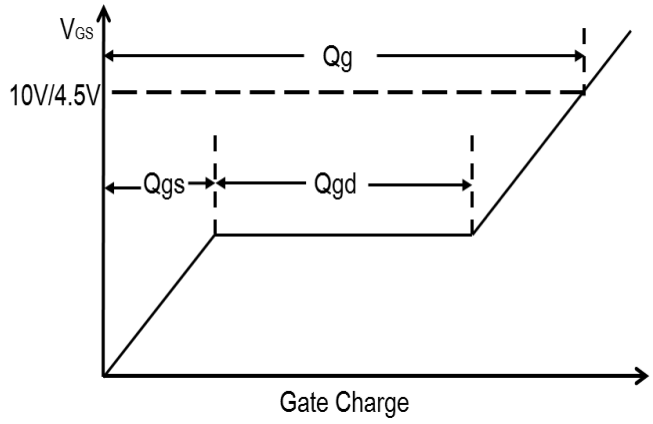

Fig.4   Gate Charge Waveform
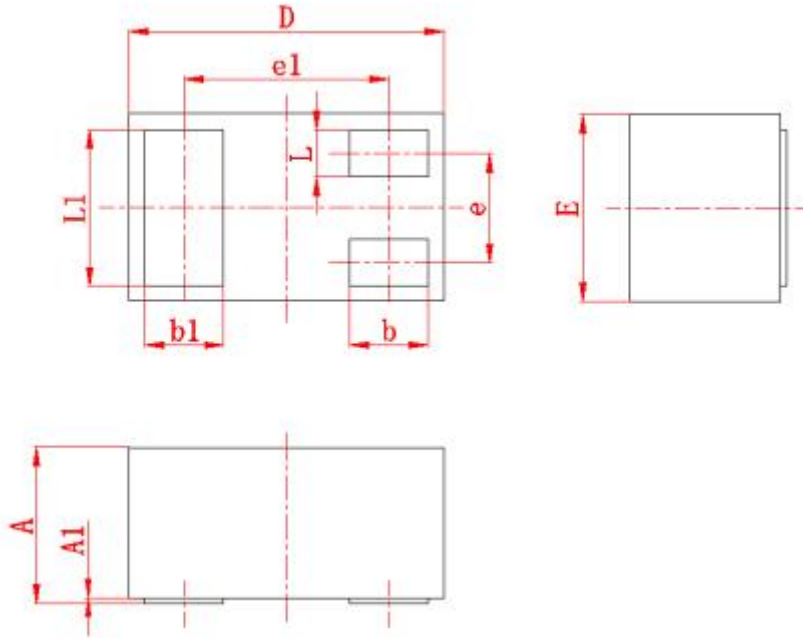

Fig.5   Normalized Transient Response

Fig.6   Maximum Safe Operation Area

Fig.7 Switching Time Waveform

Fig.8 Gate Charge Waveform

Package mechanical data

Symbol	Millimeters	
	min	max
A	0.4	0.5
A1	0	0.05
D	0.9	1.1
E	0.55	0.65
e	(0.35)	
e1	(0.65)	
b	0.2	0.3
b1	0.2	0.3
L	0.1	0.2
L1	0.45	0.55

Suggested Land Pattern
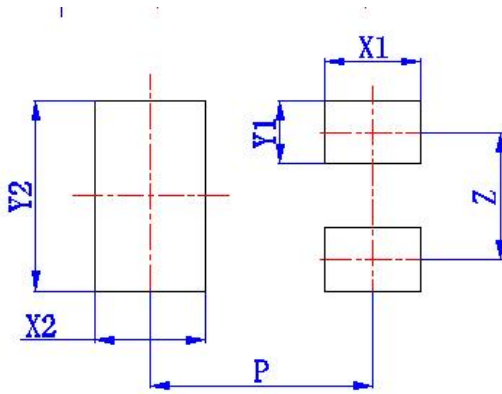
Symbol	Dimension in Millimeters
	typ
X1	(0.3)
X2	(0.35)
Y1	(0.2)
Y2	(0.6)
Z	(0.4)
P	(0.7)

REEL SPECIFICATION

P/N	PKG	QTY
MS3134KDFN	DFN1006-3	10000

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