

MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

BSS138AKDW

Product specification

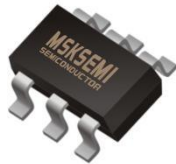
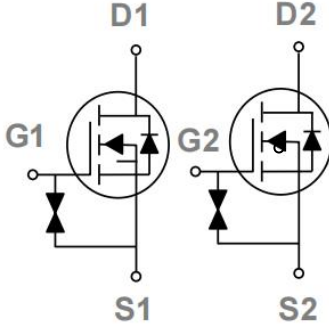

General Features

- 55V,0.3A, RDS(ON) =1.2Ω@VGS=10V
- Improved dv/dt capability
- Fast switching
- Green Device Available
- G-S ESD Protection Diode Embedded
- ESD protected up to 2KV

Application

- Motor Drive
- Power Tools
- LED Lighting

Reference News

PACKAGE OUTLINE	Pin Configuration	Marking
		
<p>SOT-363</p>		

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	55	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Drain Current – Continuous (TA=25C)	0.3	A
	Drain Current – Continuous (TA=70C)	0.2	A
I _{DM}	Drain Current – Pulsed ¹	0.9	A
P _D	Power Dissipation (TA=25C)	0.28	W
	Power Dissipation – Derate above 25C	0.002	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 _{θJA}	Thermal Resistance Junction to ambient	---	450	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	55	---	---	V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25C , I _D =1mA	---	0.04	---	V/ C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =55V , V _{GS} =0V , T _J =25C	---	---	1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ±20V , V _{DS} =0V	---	---	±10	uA

On Characteristics

RDS(ON)	Static Drain-Source On-Resistance	VGS=10V , ID=0.3A	---	1.2	1.5	Ω
		VGS=4.5V , ID=0.2A	---	1.3	2.2	Ω
VGS(th)	Gate Threshold Voltage	VGS=VDS , ID =250uA	0.8	1.1	1.6	V
Δ VGS(th)	VGS(th) Temperature Coefficient		---	-4	---	mV/ C
gfs	Forward Transconductance	VDS=10V , ID=0.1A	---	0.24	---	S

Dynamic and switching Characteristics

Qg	Total Gate Charge ^{2, 3}	VDS=55V , VGS=10V , ID=0.2A	---	1.1	---	nC
Qgs	Gate-Source Charge ^{2, 3}		---	0.1	---	
Qgd	Gate-Drain Charge ^{2, 3}		---	0.23	---	
Td(on)	Turn-On Delay Time ^{2, 3}	VDD=55V , VGS=10V , RG=6 Ω ID=0.2A	---	3	---	ns
Tr	Rise Time ^{2, 3}		---	5	---	
Td(off)	Turn-Off Delay Time ^{2, 3}		---	14	---	
Tf	Fall Time ^{2, 3}		---	9	---	
Ciss	Input Capacitance	VDS=10V , VGS=0V , F=1MHz	---	30.6	---	pF
Coss	Output Capacitance		---	5.5	---	
Crss	Reverse Transfer Capacitance		---	4	---	

Drain- Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Is	Continuous Source Current	VG=VD=0V , Force Current	---	---	0.3	A
ISM	Pulsed Source Current		---	---	0.6	A
VSD	Diode Forward Voltage	VGS=0V , Is=1A , TJ=25C	---	---	1.4	V

Note :

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

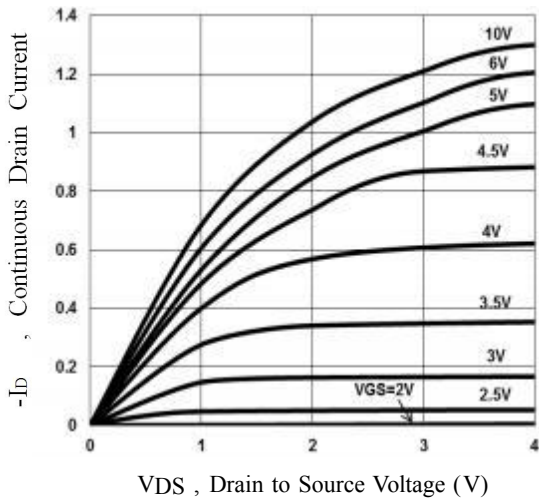


Fig. 1 Output Characteristics

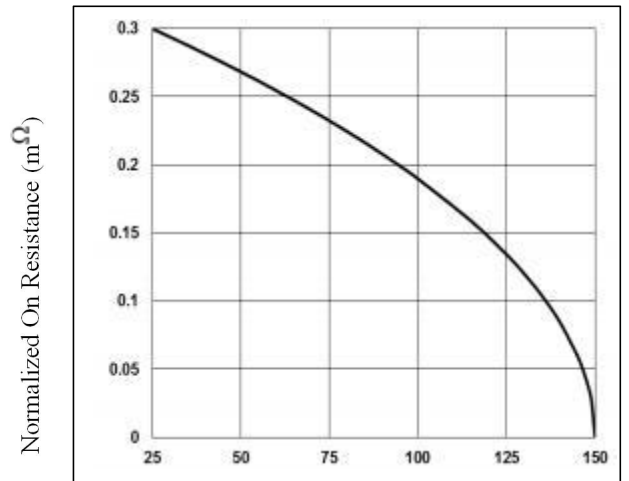


Fig. 2 Continuous Drain Current vs. TJ

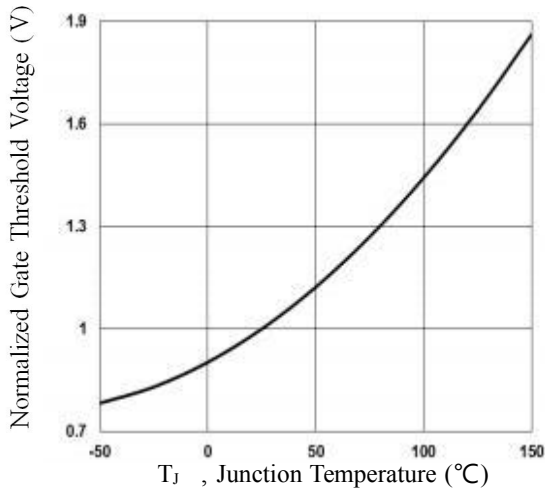


Fig. 3 Normalized RDSON vs. TJ

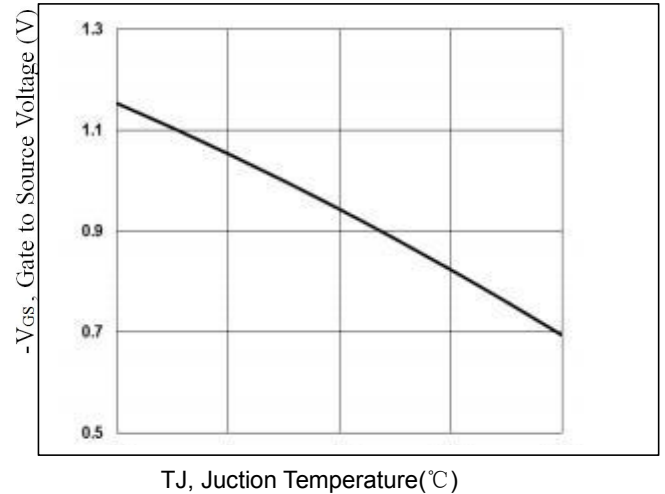


Fig. 4 Normalized Vth vs. TJ

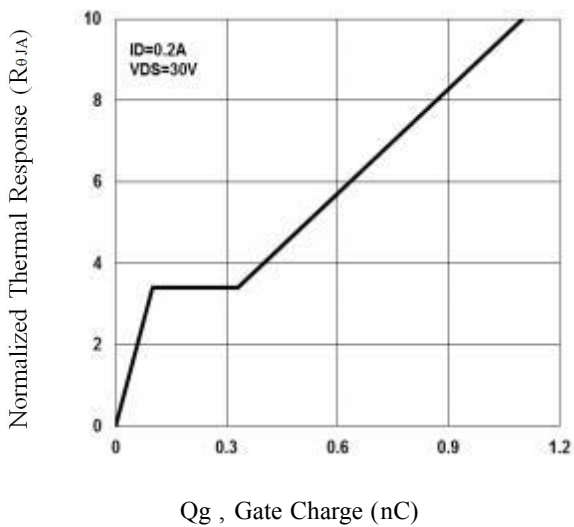


Fig. 5 Gate Charge Waveform

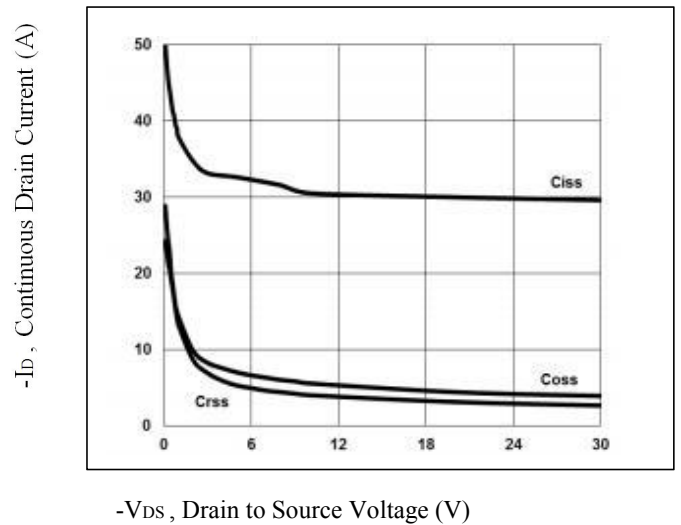


Fig. 6 Capacitance Characteristics

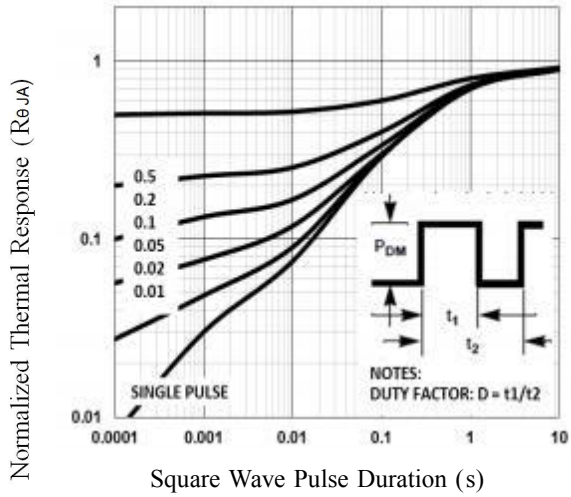


Fig. 7 Normalized Transient Impedance

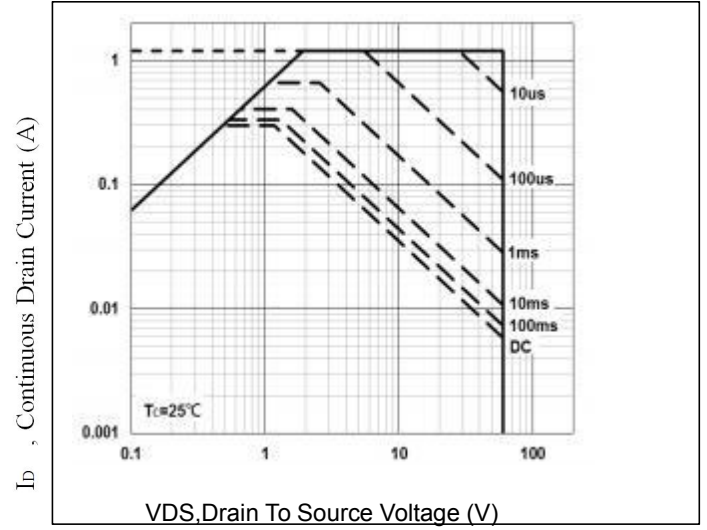


Fig. 8 Maximum Safe Operation Area

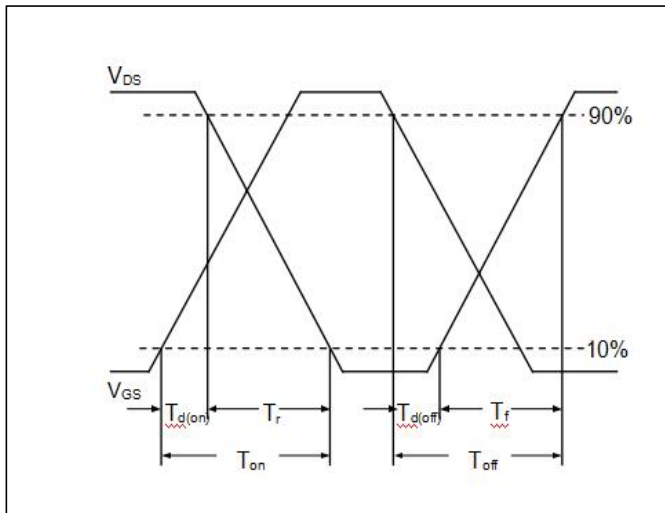
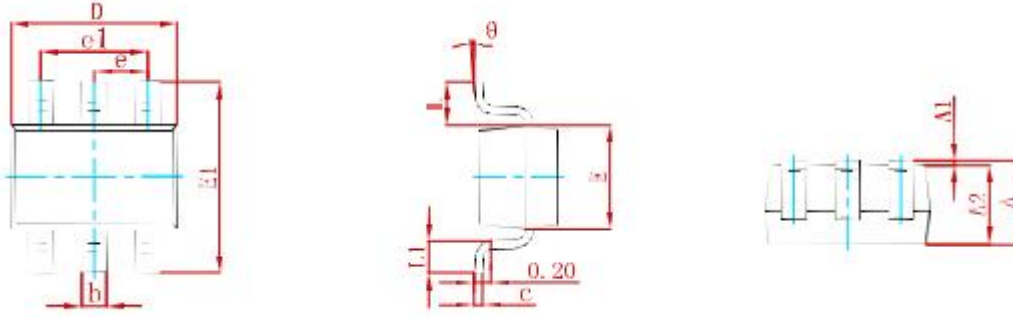


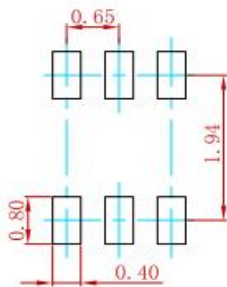
Fig. 9 Switching Time Waveform

PACKAGE MECHANICAL DATA



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
g	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
BSS138AKDW	SOT-363	3000

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