

MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

MS30N06DF

Product specification

Features

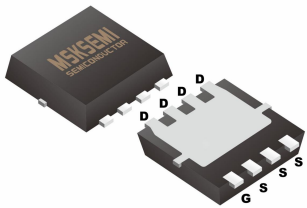
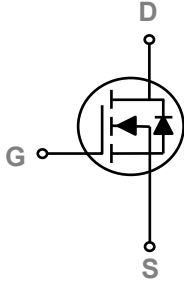

- 60V,30A, RDS(ON)=28mΩ@VGS=10V
- Improved dv/dt capability
- Fast switching
- Green Device Available

Application

- Motor Drive
- Power Tools
- LED Lighting

BVDSS	RDSON	ID
60V	28mΩ	30A

Reference News

PACKAGE OUTLINE	Pin Configuration	Marking
 <p>DFN3X3-8L</p>		

Absolute Maximum Ratings Tc=25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	60	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Drain Current - Continuous (T _c =25°C)	30	A
	Drain Current - Continuous (T _c =100°C)	15	A
I _{DM}	Drain Current - Pulsed ¹	74	A
P _D	Power Dissipation (T _c =25°C)	31	W
	Power Dissipation - Derate above 25°C	0.32	W/°C
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction to ambient	---	62	°C/W
R _{θJC}	Thermal Resistance Junction to Case	---	3.1	°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	60	---	---	V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C , I _D =1mA	---	0.06	---	V/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =60V , V _{GS} =0V , T _J =25°C	---	---	1	uA
		V _{DS} =48V , V _{GS} =0V , T _J =125°C	---	---	10	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ±20V , V _{DS} =0V	---	---	±100	nA

On Characteristics

R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V , I _D =10A	---	28	36	mΩ
		V _{GS} =4.5V , I _D =5A	---	36	45	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.0	1.6	2.5	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	-4.6	---	mV/°C
g _{fs}	Forward Transconductance	V _{DS} =10V , I _D =8A	---	11	---	S

Dynamic and switching Characteristics

Q _g	Total Gate Charge ^{3, 4}	V _{DS} =30V , V _{GS} =10V , I _D =10A	---	16.4	---	nC
Q _{gs}	Gate-Source Charge ^{3, 4}		---	3.1	---	
Q _{gd}	Gate-Drain Charge ^{3, 4}		---	3.7	---	
T _{d(on)}	Turn-On Delay Time ^{3, 4}	V _{DD} =30V , V _{GS} =10V , R _G =6Ω I _D =1A	---	4.6	---	ns
T _r	Rise Time ^{3, 4}		---	14.8	---	
T _{d(off)}	Turn-Off Delay Time ^{3, 4}		---	27.2	---	
T _f	Fall Time ^{3, 4}		---	7.8	---	
C _{iss}	Input Capacitance	V _{DS} =30V , V _{GS} =0V , F=1MHz	---	1180	---	pF
C _{oss}	Output Capacitance		---	80	---	
C _{rss}	Reverse Transfer Capacitance		---	52	---	

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	---	---	30	A
I _{SM}	Pulsed Source Current		---	---	60	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. V_{DD}=50V, V_{GS}=10V, L=0.1mH, I_{AS}=23A., R_G=25Ω, Starting T_J=25°C
3. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
4. Essentially independent of operating temperature.

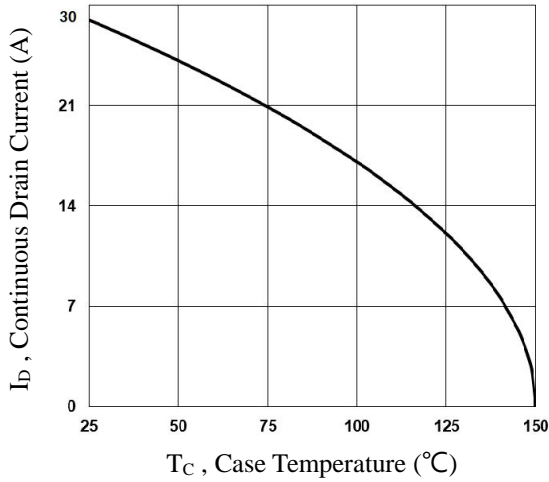


Fig.1 Continuous Drain Current vs. T_c

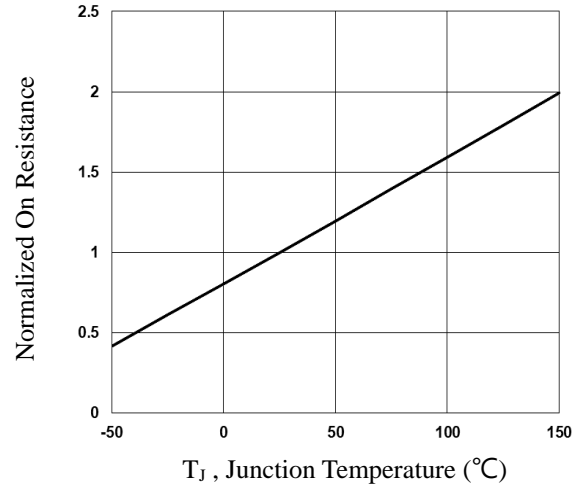


Fig.2 Normalized R_{DS(on)} vs. T_j

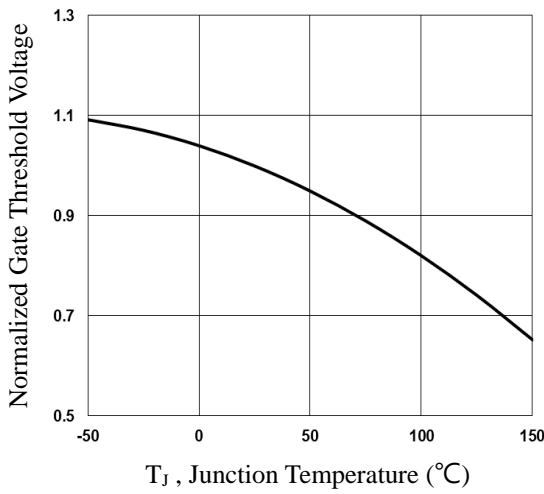


Fig.3 Normalized V_{th} vs. T_j

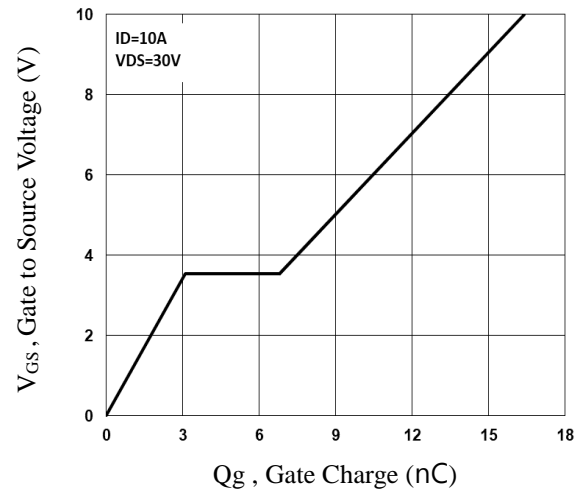


Fig.4 Gate Charge Waveform

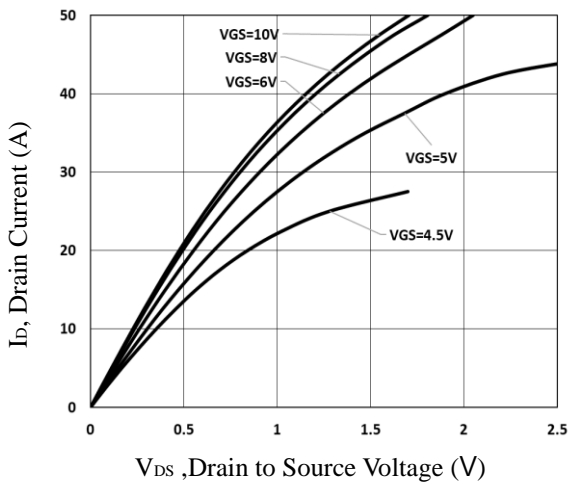


Fig.5 Typical Output Characteristics

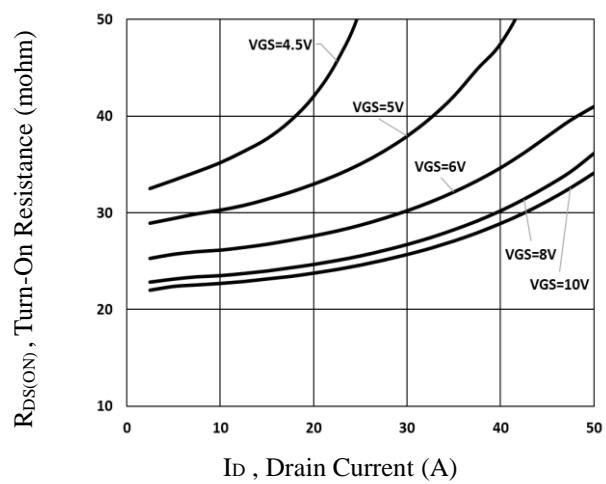


Fig.6 Turn-On Resistance vs. I_D

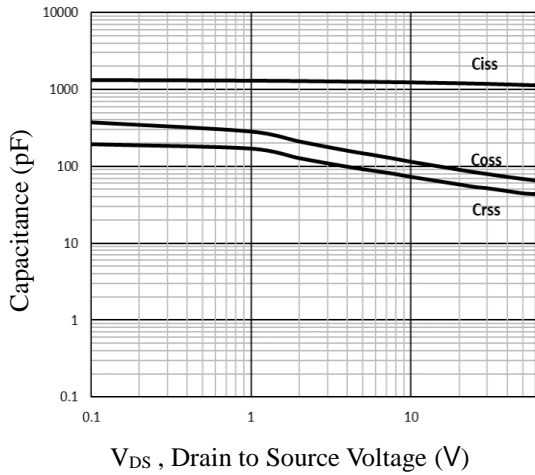


Fig.7 Capacitance Characteristics

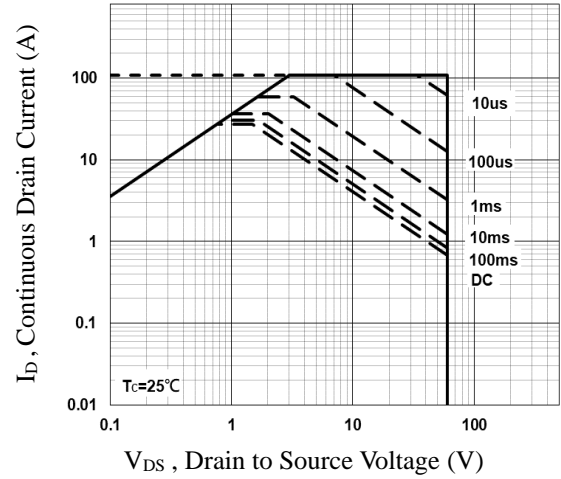


Fig.8 Maximum Safe Operation Area

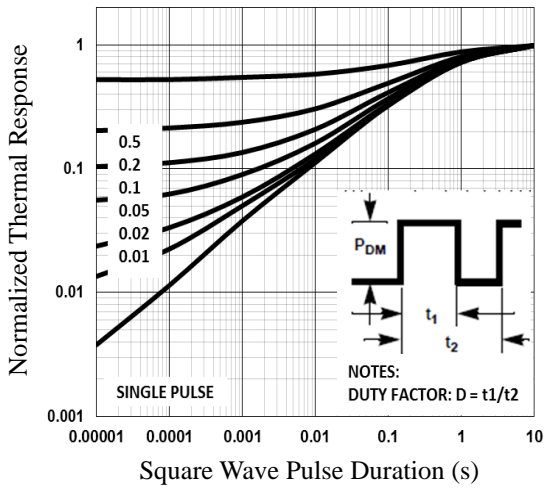
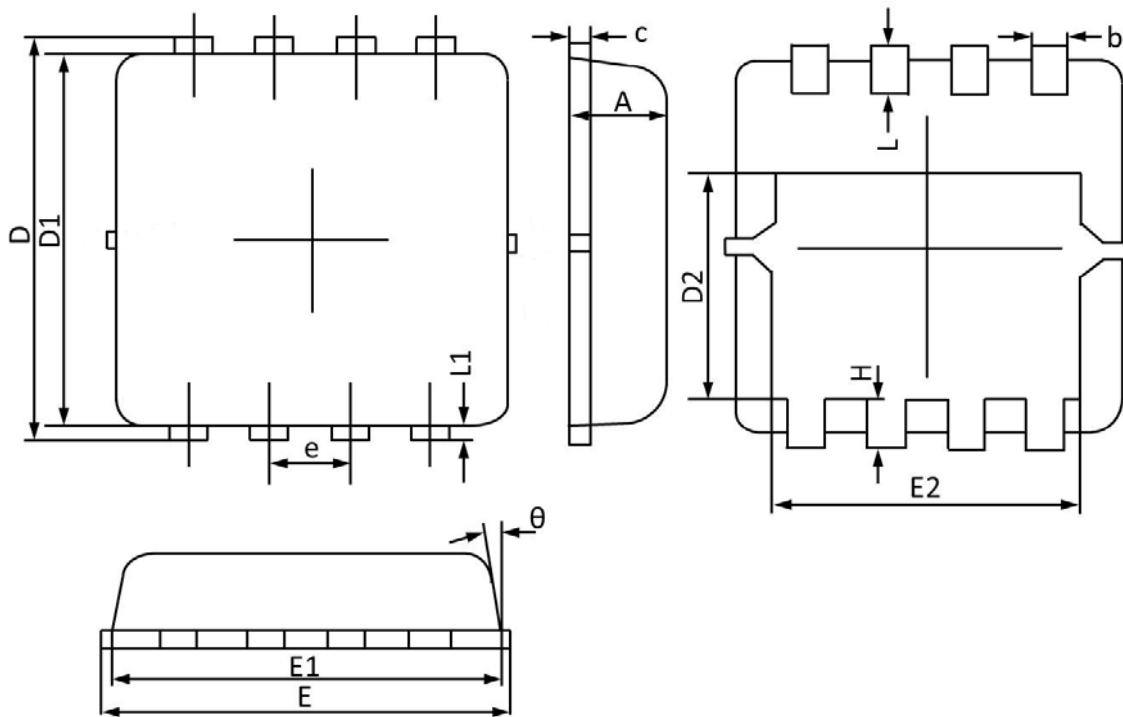


Fig.9 Normalized Transient Impedance

PDFN3x3 PACKAGE INFORMATION


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	0.900	0.700	0.035	0.028
b	0.350	0.240	0.014	0.009
c	0.250	0.100	0.010	0.004
D	3.450	3.050	0.136	0.120
D1	3.200	2.900	0.126	0.114
D2	1.850	1.350	0.073	0.053
E	3.400	3.000	0.134	0.118
E1	3.250	2.900	0.128	0.114
E2	2.600	2.350	0.102	0.093
e	0.65BSC		0.026BSC	
H	0.500	0.300	0.020	0.012
L	0.500	0.300	0.020	0.012
L1	0.200	0.070	0.008	0.003
θ	12°	0°	12°	0°

REEL SPECIFICATION

P/N	PKG	QTY
MS30N06DF	DFN3X3-8L	5000

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