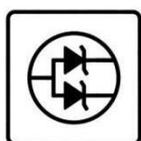


# MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

## MSK80N03NF

Product specification

**Features**

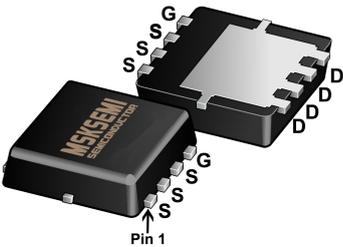
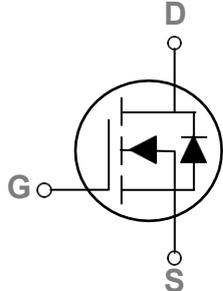
- 30V,80A, RDS(ON) =3.6mΩ@VGS = 10V
- Improved dv/dt capability
- Fast switching
- Green Device Available

**Applications**

- MB / VGA / Vcore
- POL Applications
- SMPS2<sup>nd</sup> SR

BVDSS	RDSON	ID
30V	3.6mΩ	80A

**Reference News**

PACKAGE OUTLINE	PIN Configuration	Marking
 <p>DFN5X6-8L</p>		

**Absolute Maximum Ratings Tc=25°C unless otherwise noted**

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-Source Voltage	30	V
V <sub>GS</sub>	Gate-Source Voltage	±20	V
I <sub>D</sub>	Drain Current – Continuous (T <sub>C</sub> =25°C)	80	A
	Drain Current – Continuous (T <sub>C</sub> =100°C)	38	A
I <sub>DM</sub>	Drain Current – Pulsed <sup>1</sup>	240	A
P <sub>D</sub>	Power Dissipation (T <sub>C</sub> =25°C)	45	W
	Power Dissipation – Derate above 25°C	0.36	W/°C
T <sub>STG</sub>	Storage Temperature Range	-55 to 150	°C
T <sub>J</sub>	Operating Junction Temperature Range	-55 to 150	°C

**Thermal Characteristics**

Symbol	Parameter	Typ.	Max.	Unit
R <sub>θJA</sub>	Thermal Resistance Junction to ambient	---	62	°C/W
R <sub>θJC</sub>	Thermal Resistance Junction to Case	---	2.8	°C/W

**Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)**
**Static State Characteristics**

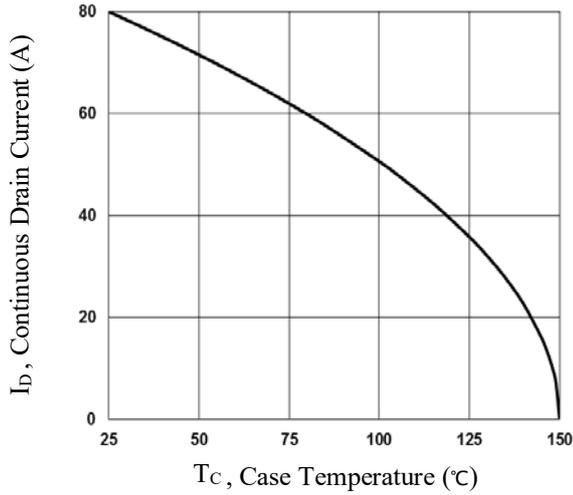
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V , I <sub>D</sub> =250uA	30	---	---	V
ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	BV <sub>DSS</sub> Temperature Coefficient	Reference to 25°C , I <sub>D</sub> =1mA	---	0.04	---	V/°C
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =30V , V <sub>GS</sub> =0V , T <sub>J</sub> =25°C	---	---	1	uA
		V <sub>DS</sub> =24V , V <sub>GS</sub> =0V , T <sub>J</sub> =125°C	---	---	10	uA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V , V <sub>DS</sub> =0V	---	---	±100	nA
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sup>3</sup>	V <sub>GS</sub> =10V , I <sub>D</sub> =20A	---	3.6	4.5	mΩ
		V <sub>GS</sub> =4.5V , I <sub>D</sub> =10A	---	4.5	6.5	mΩ
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	1.0	1.6	2.5	V
ΔV <sub>GS(th)</sub>	V <sub>GS(th)</sub> Temperature Coefficient		---	-4	---	mV/°C
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =10V , I <sub>D</sub> =10A	---	23	---	S

**Dynamic Characteristics**

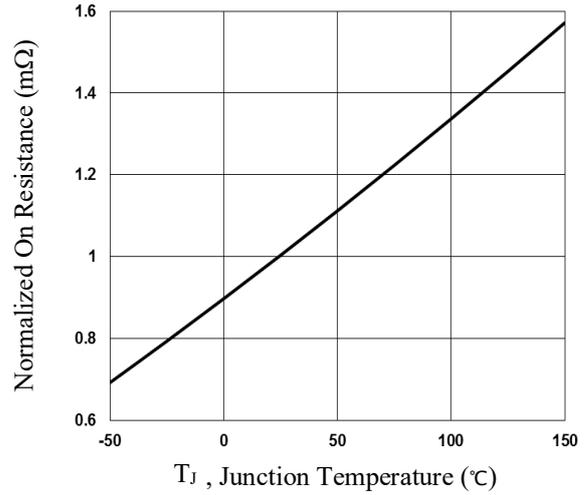
Q <sub>g</sub>	Total Gate Charge <sup>3, 4</sup>	V <sub>DS</sub> =15V , V <sub>GS</sub> =4.5V , I <sub>D</sub> =20A	---	11.1	---	nC
Q <sub>gs</sub>	Gate-Source Charge <sup>3, 4</sup>		---	1.85	---	
Q <sub>gd</sub>	Gate-Drain Charge <sup>3, 4</sup>		---	6.8	---	
T <sub>d(on)</sub>	Turn-On Delay Time <sup>3, 4</sup>	V <sub>DD</sub> =15V , V <sub>GS</sub> =10V , R <sub>G</sub> =3.3Ω I <sub>D</sub> =15A	---	7.5	---	ns
T <sub>r</sub>	Rise Time <sup>3, 4</sup>		---	14.5	---	
T <sub>d(off)</sub>	Turn-Off Delay Time <sup>3, 4</sup>		---	35.2	---	
T <sub>f</sub>	Fall Time <sup>3, 4</sup>		---	9.6	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V , V <sub>GS</sub> =0V , F=1MHz	---	1210	---	pF
C <sub>oss</sub>	Output Capacitance		---	190	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	100	---	
R <sub>g</sub>	Gate resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, F=1MHz	---	2.5	---	Ω

**Drain-Source Diode Characteristics**

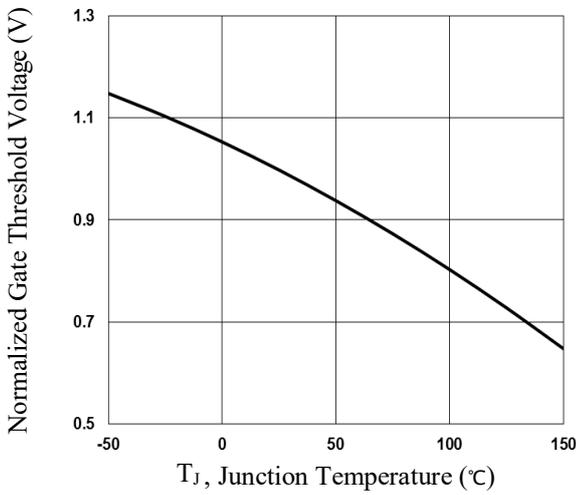
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V , Force Current	---	---	80	A
I <sub>SM</sub>	Pulsed Source Current <sup>3</sup>		---	---	160	A
V <sub>SD</sub>	Diode Forward Voltage <sup>3</sup>	V <sub>GS</sub> =0V , I <sub>S</sub> =1A , T <sub>J</sub> =25°C	---	---	1.2	V



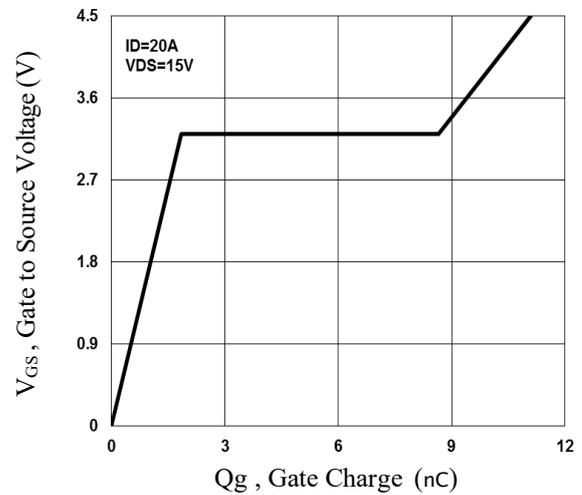
**Fig.1 Continuous Drain Current vs. T<sub>c</sub>**



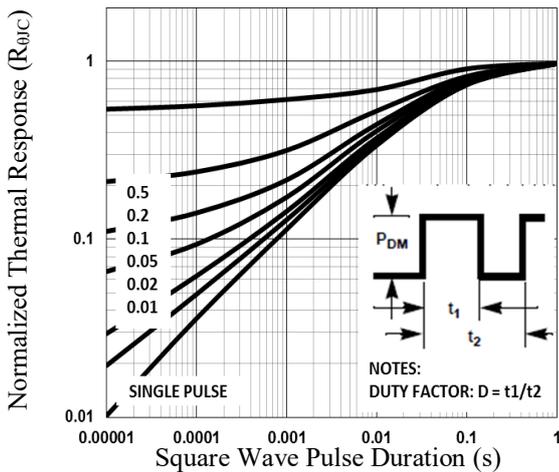
**Fig.2 Normalized R<sub>DS(on)</sub> vs. T<sub>J</sub>**



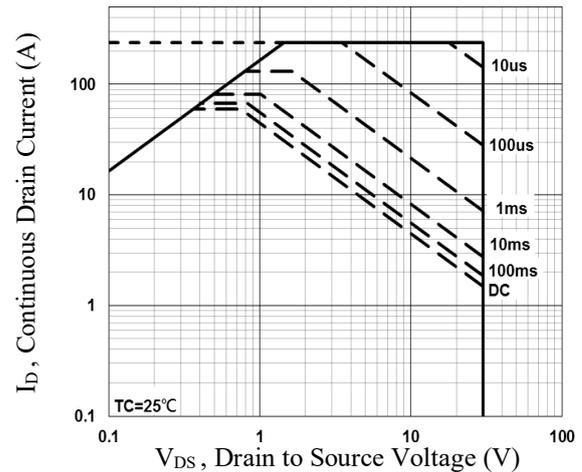
**Fig.3 Normalized V<sub>th</sub> vs. T<sub>J</sub>**



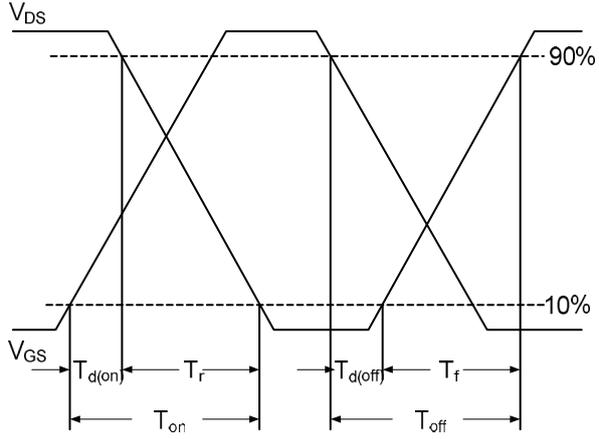
**Fig.4 Gate Charge Waveform**



**Fig.5 Normalized Transient Impedance**

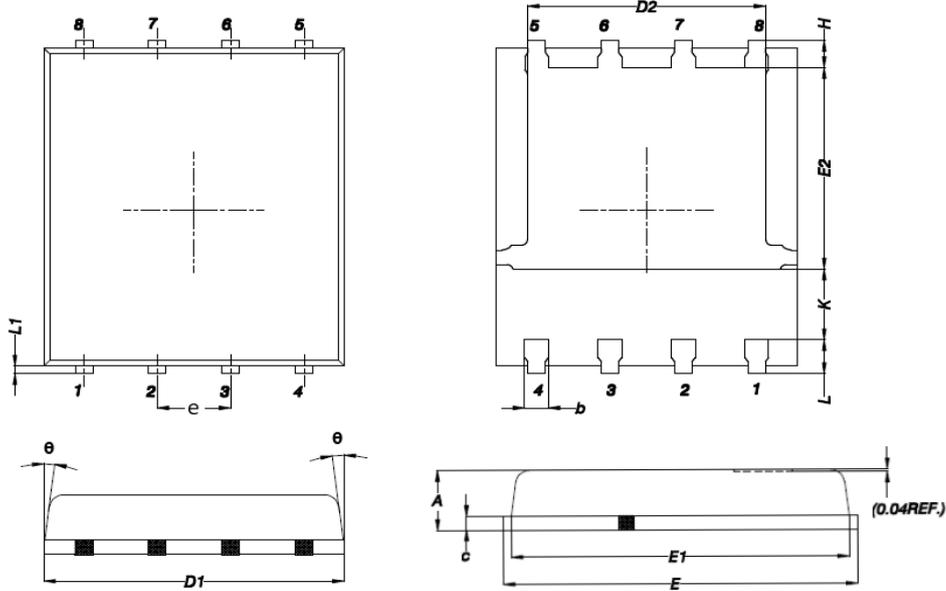


**Fig.6 Maximum Safe Operation Area**



**Fig.7 Switching Time Waveform**

**PACKAGE INFORMATION**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.200	0.850	0.047	0.031
b	0.510	0.300	0.020	0.012
C	0.300	0.200	0.012	0.008
D1	5.400	4.800	0.212	0.189
D2	4.310	3.610	0.170	0.142
E	6.300	5.850	0.248	0.230
E1	5.960	5.450	0.235	0.215
E2	3.920	3.300	0.154	0.130
e	1.27BSC		0.05BSC	
H	0.650	0.380	0.026	0.015
K	---	1.100	---	0.043
L	0.710	0.380	0.028	0.015
L1	0.250	0.050	0.009	0.002
θ	12°	0°	12°	0°

**REEL SPECIFICATION**

P/N	PKG	QTY
MSK80N03NF	DFN5X6-8L	5000

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