

# Preliminary MSD80N03

## N-Channel Enhancement Mode Power MOSFET

### Description

The MSD80N03 is a N-channel enhancement-mode MOSFET , providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost effectiveness. The TO-252 package is universally preferred for all commercial-industrial applications

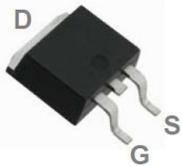
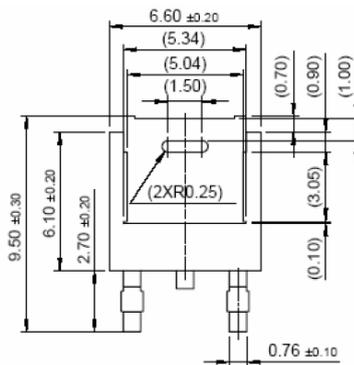
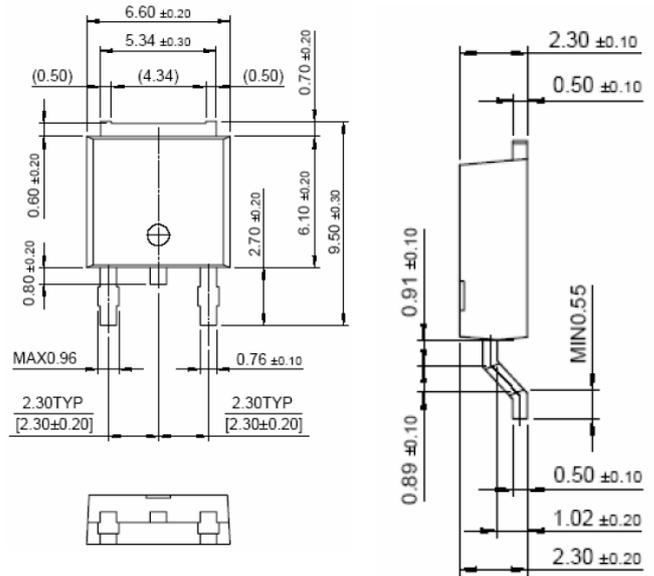
### Features

- Low RDS(on) provides higher efficiency and extends battery life
- 100% UIS testing, @VD=15V, L=0.1mH, VG=10V, IL=40V, rated VDS=25V N-CH
- Simple Drive Requirement
- Repetitive Avalanche Rated
- Fast Switching Characteristic
- RoHS compliant package & Halogen-free package

### Packing & Order Information

Part No./ T : 2,500/Reel

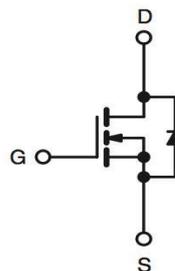
Part No./ R : 80/Tube , 4,000/Box



**RoHS**  
COMPLIANT

**HALOGEN**  
**FREE**  
Available

### Graphic symbol



## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

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

Symbol	Parameter	Value	Unit
V <sub>DS</sub>	Drain-Source Voltage	25	V
V <sub>GS</sub>	Gate-Source Voltage	±20	V
I <sub>D</sub>	Continuous Drain Current (TC=25°C)	80	A
	Continuous Drain Current (TC=100°C)	50	A
I <sub>DM</sub>	Pulsed Drain Current	36	A

## Preliminary MSD80N03

### N-Channel Enhancement Mode Power MOSFET

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

Symbol	Parameter	Value	Unit
I <sub>AS</sub>	Avalanche Current	53	A
E <sub>AS</sub>	Avalanche Energy @ L=0.1mH, I <sub>D</sub> =37.5A, R <sub>g</sub> =25Ω	140	mJ
E <sub>AR</sub>	Repetitive Avalanche Energy @ L=0.05mH	40	mJ
T <sub>j</sub> , T <sub>stg</sub>	Operating Junction and Storage Temperature	-55~+175	°C
PD	Power Dissipation@ TC=25°C	83	W
	Power Dissipation@ TC=100°C	45	W

**Note:**

1. Pulse width limited by maximum junction temperature
2. Duty cycle ≤ 1%

#### Thermal Characteristics (Tc=25°C unless otherwise noted)

Symbol	Parameter	Value	Units
R <sub>thjc</sub>	Typical thermal resistance	1.8	°C/W
R <sub>θJA</sub>		75	

#### Static Characteristics

Symbol	Test Conditions	Min	Typ.	Max.	Units
V <sub>GS</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1.0	1.5	3.0	V
R <sub>DS(ON)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 2 A V <sub>GS</sub> = 5.5 V, I <sub>D</sub> = 2 A	--	5.3 7.6	6 9.5	mΩ
BVDSS	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 250μA	25	--	--	V
I <sub>DSS</sub>	V <sub>DS</sub> = 20 V, V <sub>GS</sub> = 0 V V <sub>DS</sub> = 20 V, V <sub>GS</sub> = 0 V, T <sub>j</sub> = 125°C	--	--	1 25	uA
I <sub>D(ON)</sub>	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 10 V	80	--	--	A
I <sub>GSS</sub>	V <sub>GS</sub> = ±20	--	--	±100	nA
G <sub>FS</sub>	V <sub>DS</sub> = 5 V, I <sub>D</sub> = 24 A	--	25	--	S

#### Dynamic Characteristics

Symbol	Test Conditions	Min	Typ.	Max.	Units
Q <sub>g</sub> (V <sub>GS</sub> = 10 V)	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 30 A, V <sub>GS</sub> = 10 V	--	23	--	nC
Q <sub>g</sub> (V <sub>GS</sub> = 5 V)		--	13	--	nC
Q <sub>gs</sub>		--	4.7	--	nC
Q <sub>gd</sub>		--	7.4	--	nC
R <sub>g</sub>	V <sub>GS</sub> = 15 mV, V <sub>DS</sub> = 0, f = 1MHz	--	1.7	--	Ω

## Preliminary MSD80N03

N-Channel Enhancement Mode Power MOSFET

Dynamic Characteristics					
Symbol	Test Conditions	Min	Typ.	Max.	Units
$t_{d(on)}$	$V_{DS} = 15\text{ V}, I_D = 25\text{ A},$ $R_{GS} = 2.7\ \Omega, V_{GS} = 10\text{ V}$	--	22	--	ns
$t_r$		--	16	--	ns
$t_{d(off)}$		--	65	--	ns
$t_f$		--	10	--	ns
$C_{ISS}$	$V_{DS} = 15\text{ V}, V_{GS} = 0\text{ V},$ $F = 1.0\text{ MHz}$	--	4840	--	pF
$C_{OSS}$		--	620	--	pF
$C_{RSS}$		--	435	--	pF

Source-Drain Diode Characteristics					
Symbol	Test Conditions	Min	Typ.	Max.	Units
$I_S$		--	--	80	A
$I_{SM}$		--	--	170	
$V_{SD}$	$I_F = I_S, V_{GS} = 0\text{ V}$	--	--	1.3	V
$t_{rr}$	$I_F = I_S, V_{GS} = 0\text{ V}, dI_F/dt = 100\text{ A}/\mu\text{s}$	--	32	--	ns
$Q_{rr}$		--	12	--	nC

\*Pulse Test : Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$

## Preliminary MSD80N03

### N-Channel Enhancement Mode Power MOSFET

#### Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Bruckewell Technology Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Bruckewell"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Bruckewell makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Bruckewell disclaims

- (i) Any and all liability arising out of the application or use of any product.
- (ii) Any and all liability, including without limitation special, consequential or incidental damages.
- (iii) Any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Bruckewell's knowledge of typical requirements that are often placed on Bruckewell products in generic applications.

Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time.

Product specifications do not expand or otherwise modify Bruckewell's terms and conditions of purchase, including but not limited to the warranty expressed therein.