

MSD80N03

N-Channel 25-V 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

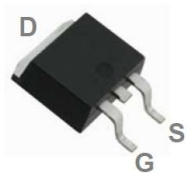
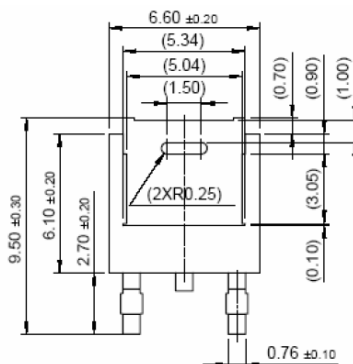
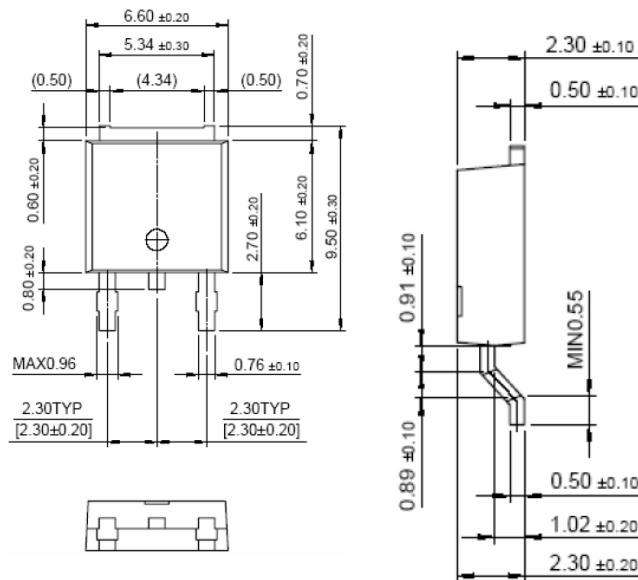
- Low RDS(on) provides higher efficiency and extends battery life
- 100% UIS testing, @ VD=15V, L=0.1mH, VG=10V, IL=40V, rated VDS=25V N-CH
- Simple Drive Requirement
- Repetitive Avalanche Rated
- Fast Switching Characteristic
- RoHS compliant package & Halogen-free package

Package type : TO-252

Packing & Order Information

Part No./ T : 2,500/Reel

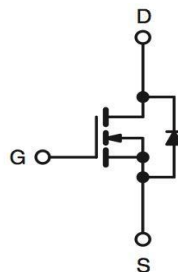
Part No./ R : 80/Tube , 4,000/Box



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 _{DS}	Drain-Source Voltage	25	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Continuous Drain Current (TC=25°C)	80	A
	Continuous Drain Current (TC=100°C)	50	A
I _{DM}	Pulsed Drain Current	36	A

MSD80N03

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Absolute Maximum Ratings (Tc=25°C unless otherwise noted)			
Symbol	Parameter	Value	Unit
I _{AS}	Avalanche Current	53	A
E _{AS}	Avalanche Energy @ L=0.1mH, I _D =37.5A, R _g =25Ω	140	mJ
E _{AR}	Repetitive Avalanche Energy @ L=0.05mH	40	mJ
T _j , T _{stg}	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 _{thjc}	Typical thermal resistance	1.8	°C/W
R _{θJA}		75	

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

Dynamic Characteristics					
Symbol	Test Conditions	Min	Typ.	Max.	Units
Q _g (V _{GS} = 10 V)	V _{DS} = 15 V, I _D = 30 A, V _{GS} = 10 V	--	23	--	nC
Q _g (V _{GS} = 5 V)		--	13	--	nC
Q _{gs}		--	4.7	--	nC
Q _{gd}		--	7.4	--	nC
R _g	V _{GS} = 15 mV, V _{DS} = 0, f = 1MHz	--	1.7	--	Ω

MSD80N03

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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 $\leq 2\%$

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