

80N03

N-CHANNEL POWER MOSFET

80A, 30V N-CHANNEL ENHANCEMENT MODE POWER MOSFET

DESCRIPTION

The 80N03 uses to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

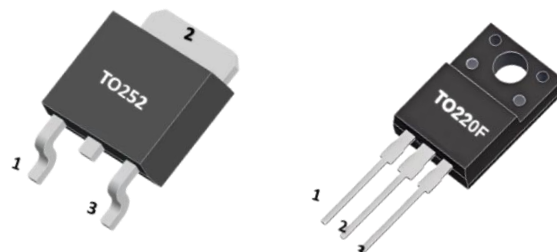
The 80N03 meet the ROHS and Green Product requirement with full function reliability approved.

FEATURE

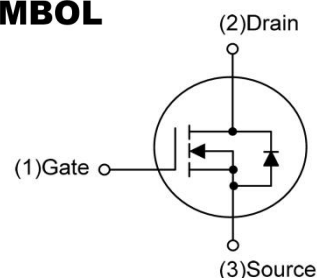
- * High density cell design for ultra low $R_{DS(ON)}$
- * Fully characterized Avalanche voltage and current
- * Good stability and uniformity with high EAS
- * Excellent package for good heat dissipation
- * Special process technology for high ESD capability

APPLICATIONS

- * Power switching application
- * Hard switched and high frequency circuits
- * Uninterruptible Power Supply



SYMBOL



ABSOLUTE MAXIMUM RATINGS($T_A=25^{\circ}\text{C}$, unless otherwise specified.)

SYMBOL	PARAMETER		VALUE	UNIT
V_{DS}	Drain-Source Voltage		30	V
V_{GS}	Gate Source Voltage		± 20	V
I_D	Continuous Drain Current (Note 1)		80	A
I_{DM}	Pulsed Drain Current (Note 2)		320	A
E_{AS}	Single Pulsed Avalanche Energy(Note 3)		306	mJ
P_D	Power Dissipation	TO-220F	70	W
		TO-252	83	
T_J	Storage Temperature		150	$^{\circ}\text{C}$
T_{STG}	Thermal Resistance Fr .00m Junction To Ambient		-55~150	$^{\circ}\text{C}$
T_L	Lead Temperature for Soldering Purposes(1/8" from case for 10s)		260	$^{\circ}\text{C}$

Notes: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.



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■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220F	θ_{JA}	62.5	°C/W
	TO-252		110	
Junction to Case	TO-220F	θ_{JC}	1.78	°C/W
	TO-252		1.9	

■ ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V,			±100	nA
ON CHARACTERISTICS(Note 4)						
Static drain-source on-sate resistance	R _{DS(ON)}	V _{GS} =10V, I _D =40A		4.4	4.8	mΩ
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} ,I _D =250μA	1.0	1.4	3.0	V
Forward transconductance	g _{FS}	V _{DS} =5V, I _D =24A	20			S
DYNAMIC PARAMETERS(Note 4 5)						
Input Capacitance	C _{ISS}	V _{GS} =0V,V _{DS} =15V f=1.0MHz		2160		pF
Output Capacitance	C _{OSS}			272		pF
Reverse Transfer Capacitance	C _{RSS}			264		pF
SWITCHING PARAMETERS(Note 4 5)						
Total gate charge	Q _g	V _{DS} =10V,V _{GS} =10V I _D =30A		44		nC
Gate-source charge	Q _{gs}			6		
Gate-drain charge	Q _{gd}			11		
Turn-On Delay Time	td(on)	V _{DD} =15V,I _D =30A V _{GS} =10V, R _G =2.7Ω		20		nS
Turn-On Rise time	tr			15		
Turn-Off Delay Time	td(off)			60		
Turn-Off Fall time	tr			10		

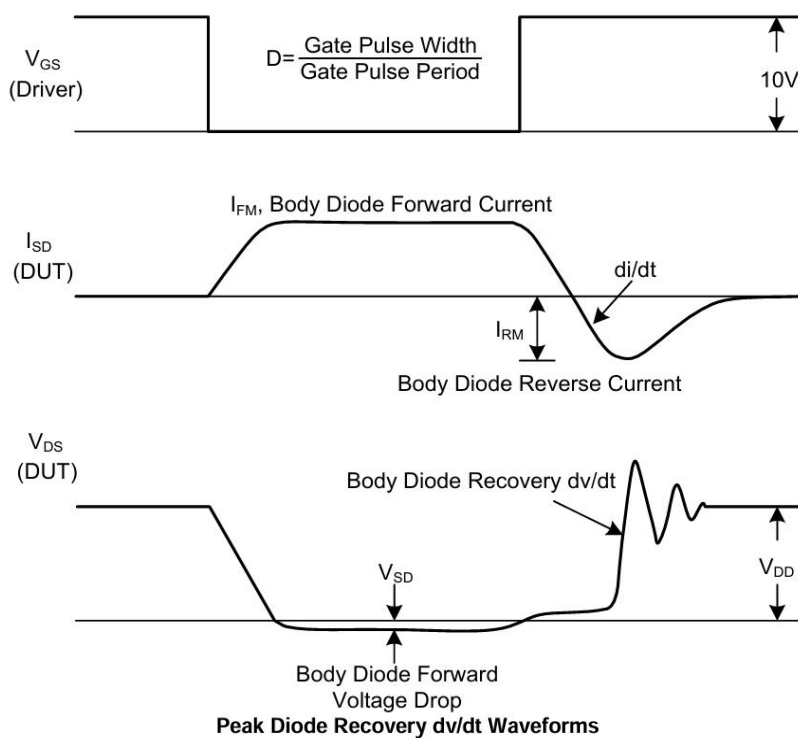
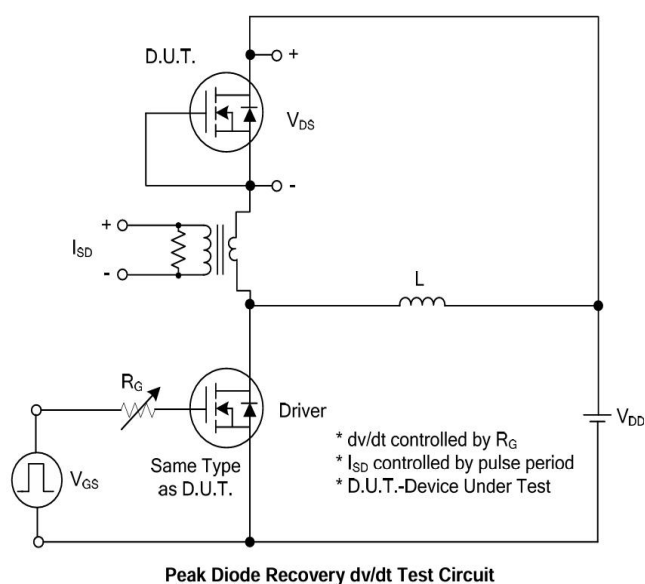
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Continuous drain-source diode forward current (Note 1)	I_S				80	A
Pulsed drain-source diode forward current (Note 2)	I_{SM}				320	A
Drain-source diode forward voltage(Note 4)	V_{SD}	$I_S=24A, V_{GS}=0V$			1.2	V

Notes:

1. $T_C=25^{\circ}C$ Limited only by maximum temperature allowed.
2. $P_w \leq 10\mu s$, Duty cycle $\leq 1\%$.
3. EAS condition: $V_{DD}=30V, V_{GS}=10V, L=0.5mH, R_g=25\Omega$ Starting $T_J = 25^{\circ}C$.
4. Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
5. Guaranteed by design, not subject to production.

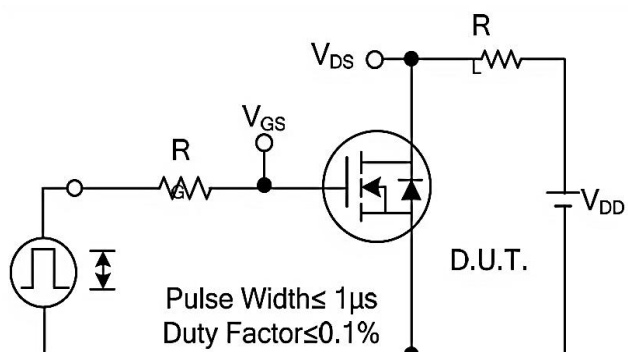
TEST CIRCUITS AND WAVEFORMS



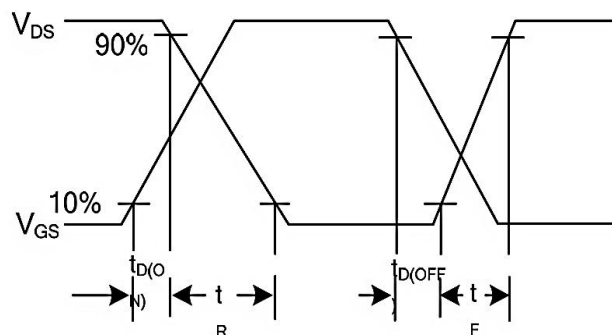
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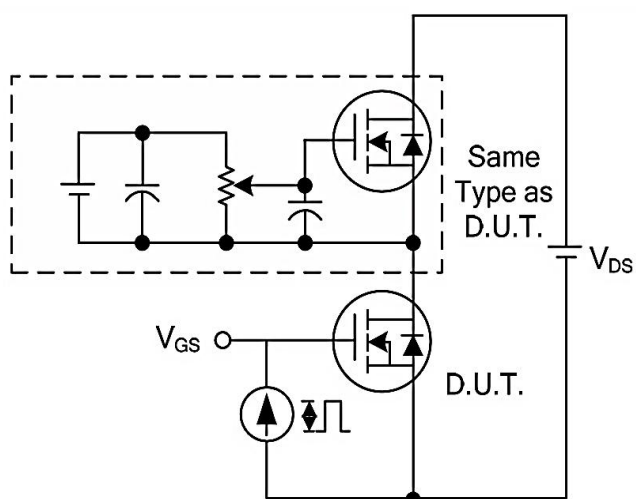
■ TEST CIRCUITS AND WAVEFORMS(Con.t)



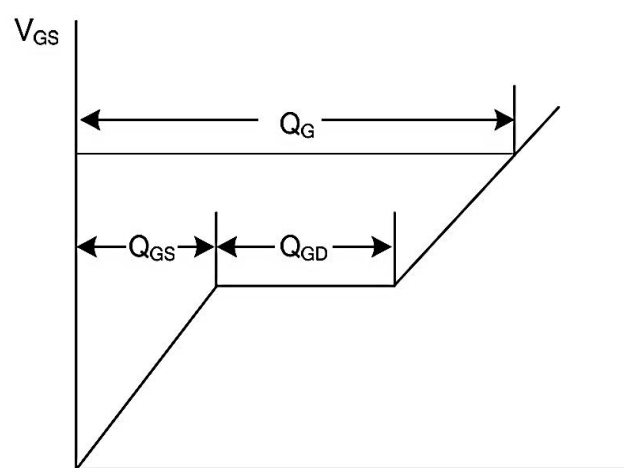
Switching Test Circuit



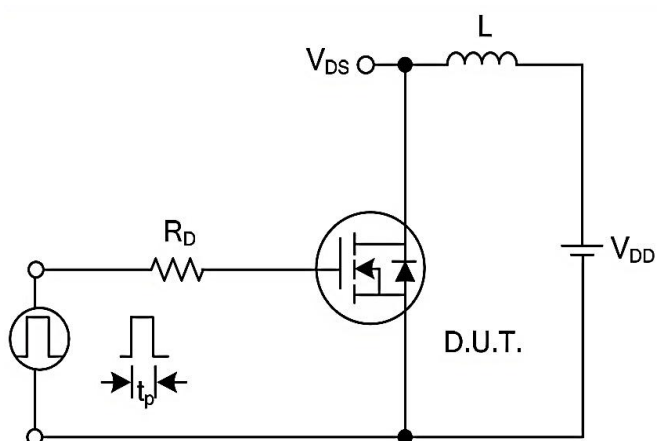
Switching Waveforms



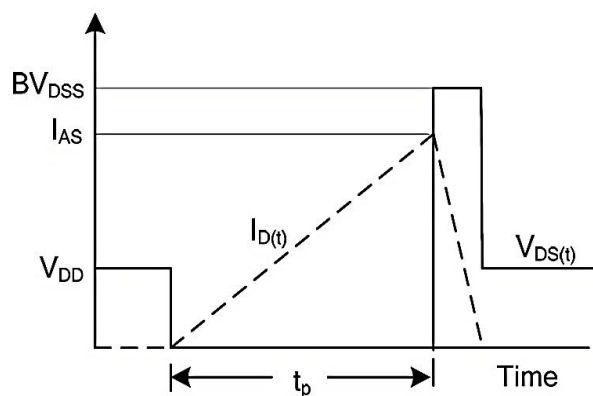
Gate Charge Test Circuit



Charge Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



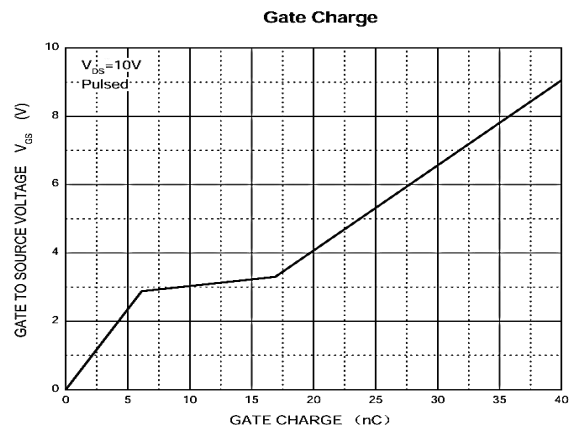
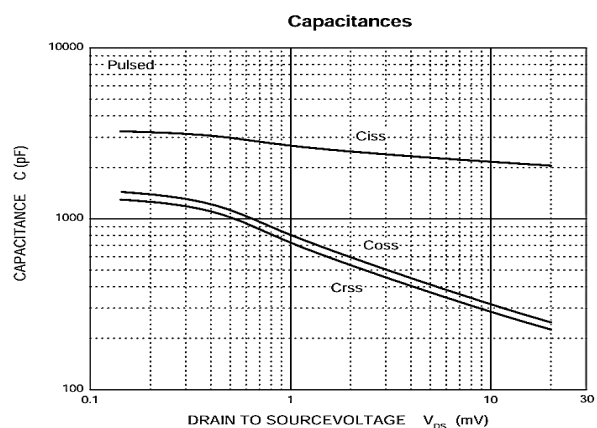
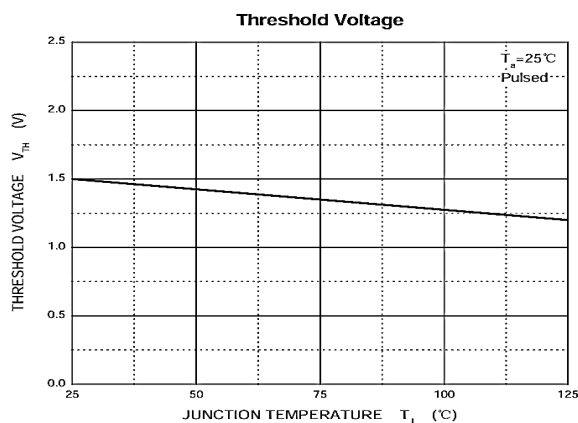
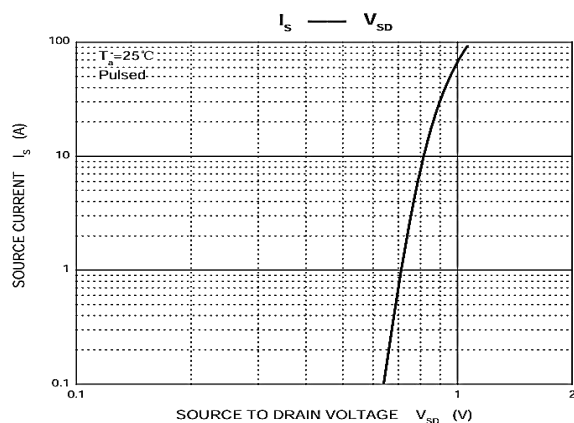
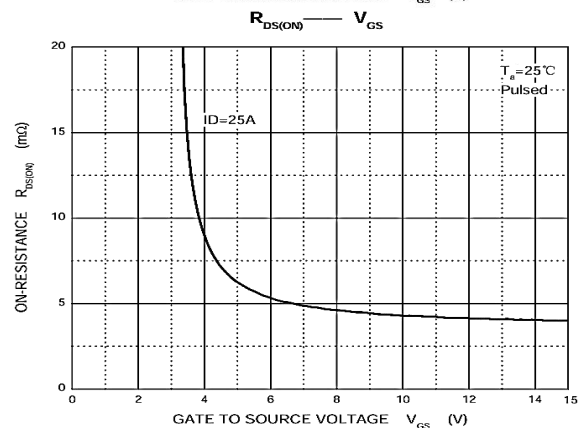
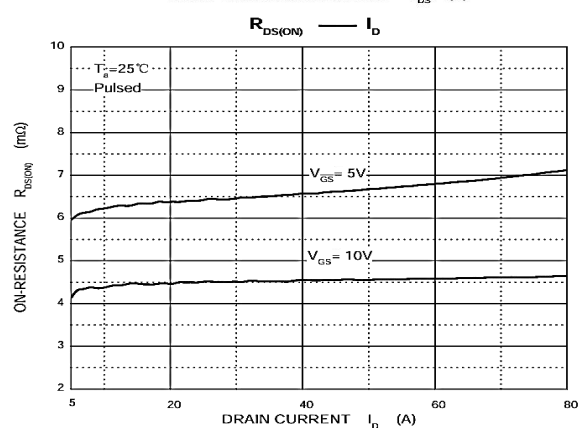
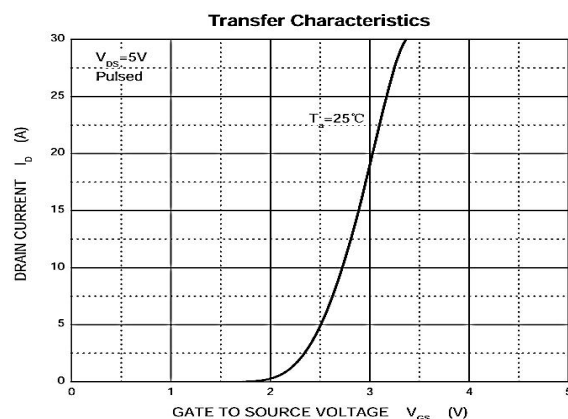
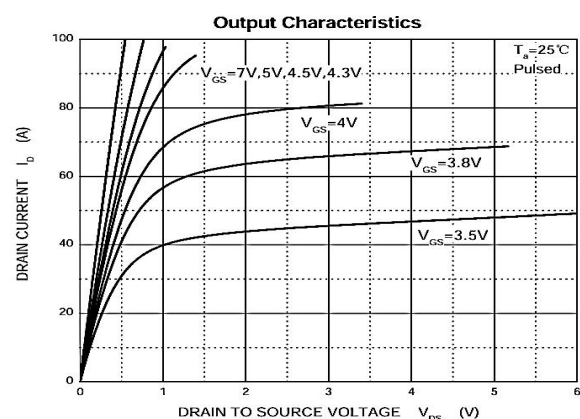
Unclamped Inductive Switching Waveforms



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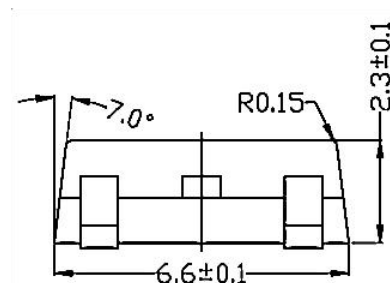
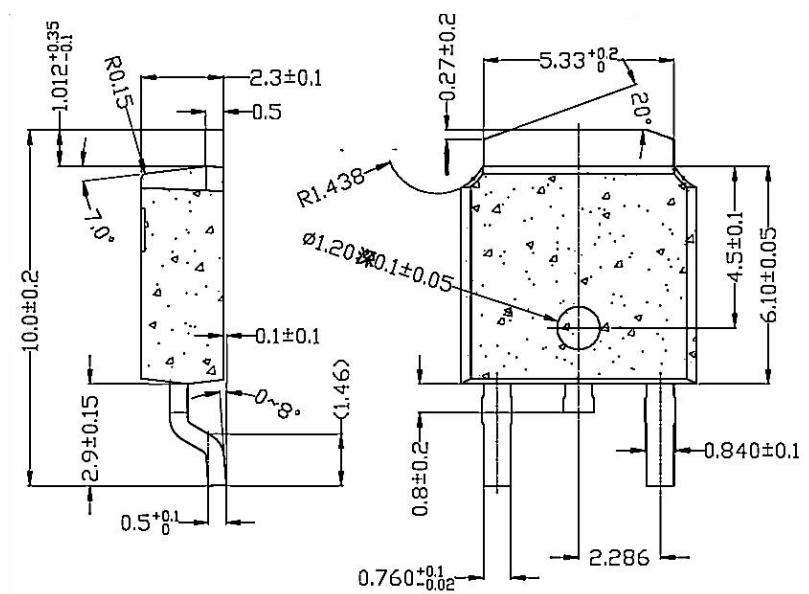
TYPICAL CHARACTERISTICS



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■ TO - 252 PACKAGE OUTLINE DIMENSIONS



■ TO - 252 PACKING INFORMATION

Package version	Reel dimensions $\phi \times H$ (mm)	Per Reel (pcs)	Reels per box	Inner box dimensions $L \times W \times H$ (mm)	Outer box (pcs)	Outer box dimensions $L \times W \times H$ (mm)
T0-252	$\phi 330 \times 20$	2500	2	360*340*50	25000	375*375*280