



HY20N03

N-CHANNEL POWER MOSFET

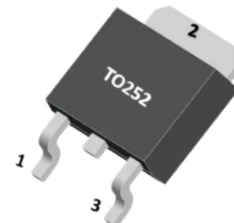
20A, 30V N-CHANNEL ENHANCEMENT MODE POWER MOSFET

DESCRIPTION

The XD20N03Y meet the ROHS and Green Product requirement with full function reliability approved.

FEATURE

- * Ambient operating temperature: 175° C
- * Low drain-source and low on-resistance
- * Logic level
- * Perfect gate charge $\times$ RDS(ON) product
- * Superior thermal resistance
- * Avalanche rated
- * Specified dv/dt
- * For fast switching buck converters



MARKING



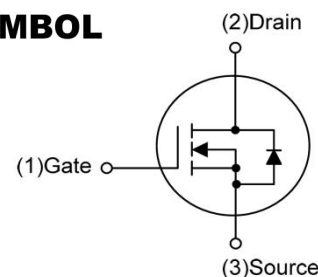
: HY LOGO

XD20N03Y=Device Code

XXXX=Date Code

Solid Dot=Green molding compound

SYMBOL



ABSOLUTE MAXIMUM RATINGS(TA=25°C, unless otherwise specified.)

SYMBOL	PARAMETER		VALUE	UNIT
V _{DSS}	Drain-Source Voltage		30	V
V _{GSS}	Gate Source Voltage		±20	V
I _D	Continuous Drain Current (T _C =25°C)		20	A
I _{DM}	Pulsed Drain Current (T _C =25°C)		120	A
E _{AS}	Avalanche Energy	Single Pulsed (Note 3)	15	mJ
E _{AR}		Repetitive (Note 2)	6	mJ
P _D	Maximum Power Dissipation (Note 1)	TO-252	60	W
T _J	Storage Temperature		150	°C
T _{STG}	Thermal Resistance From Junction To Ambient		-55~150	°C
R _{θJA}	Thermal Resistance from Junction to Ambient	TO-252	100	°C/W
R _{θJC}	Thermal Resistance From Junction To Case	TO-252	2.5	°C/W

Notes: 1. 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.

2. Repetitive Rating: Pulse width limited by maximum junction temperature.

3. I_D = 15 A, V_{DD} = 25 V, R_G = 25 Ω, Starting T_J = 25°C.

4. I_S = 20 A, V_{DS} = 24 V, di/dt = 100A/μs, T_J(MAX) = 175 °C.



HY20N03

N-CHANNEL POWER MOSFET

■ ELECTRICAL CHARACTERISTICS (TA=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	V _(BR) DSS	V _{GS} =0V, I _D =250μA	30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =30V,V _{GS} =0V		0.01	1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Drain-source on-state resistance	R _{DS(ON)}	V _{GS} =10V, I _D =15A		15.5	20	mΩ
		V _{GS} =4.5V, I _D =15A		22.9	31	
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} ,I _D =250μA	1.2	1.6	2	V
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =25V f=1.0MHz		530	700	pF
Output Capacitance	C _{OSS}			200	275	
Reverse Transfer Capacitance	C _{RSS}			60	90	
Gate Resistance	R _G			1.3		Ω
SWITCHING PARAMETERS						
Total gate charge	Q _g	V _{DS} =15V,V _{GS} =10V I _D =10A,I _G =1mA (Note 1,2)		8.4	11	nC
Gate-source charge	Q _{gs}			2.5	3.1	
Gate-drain charge	Q _{gd}			6.4	9.6	
Turn-On Delay Time	td(on)	V _{DD} =15V, I _D =15A V _{GS} =10V, R _G =12.7Ω		6.2	9.3	nS
Turn-On Rise time	tr			11	17	
Turn-Off Delay Time	td(off)			23	34	
Turn-Off Fall time	tr			18	27	
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Continuous drain-source diode forward current(Note1)	I _S				20	A
Pulsed drain-source diode forward current(Note 2)	I _{SM}				120	A
Drain-source diode forward voltage(Note 4)	V _{SD}	I _S =20A,V _{GS} =0V		1.1	1.4	V
Reverse Recovery Time	trr	V _R =15V,I _F = I _S		15	18	ns
Reverse Recovery Charge	Q _{rr}	dI/dt =100A/μs		2	3	nC

Notes:

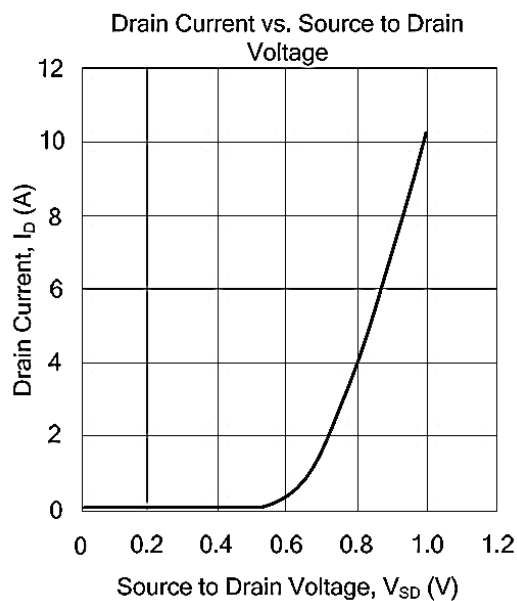
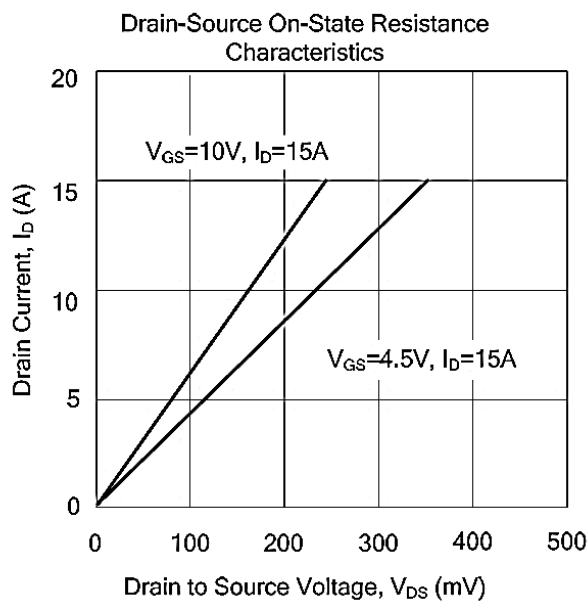
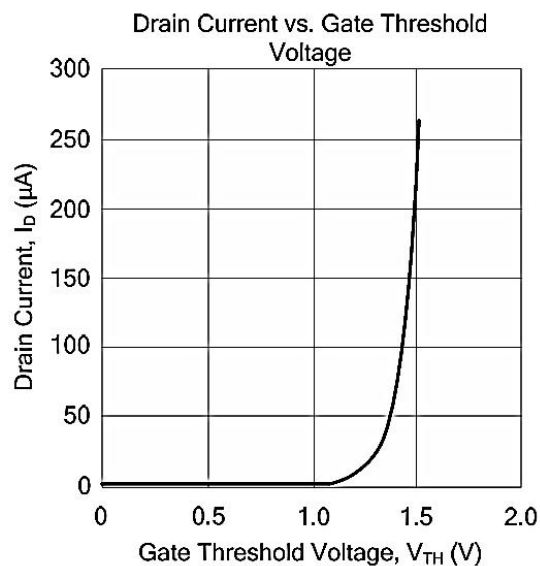
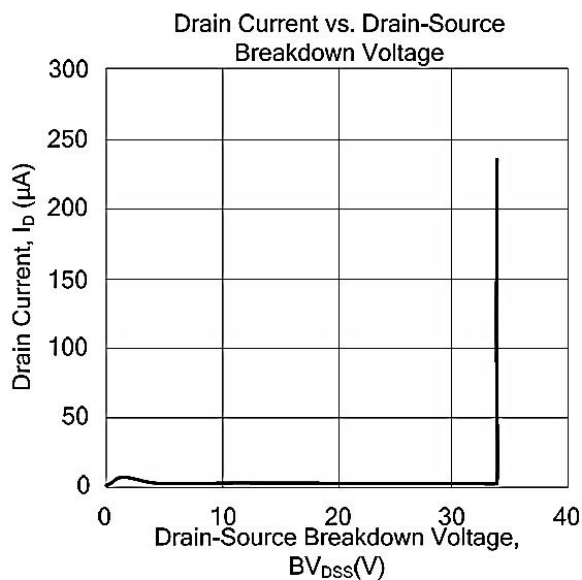
1. Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$.
2. Essentially independent of operating temperature.



HY20N03

N-CHANNEL POWER MOSFET

■ TYPICAL CHARACTERISTICS

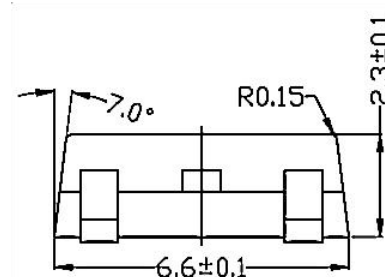
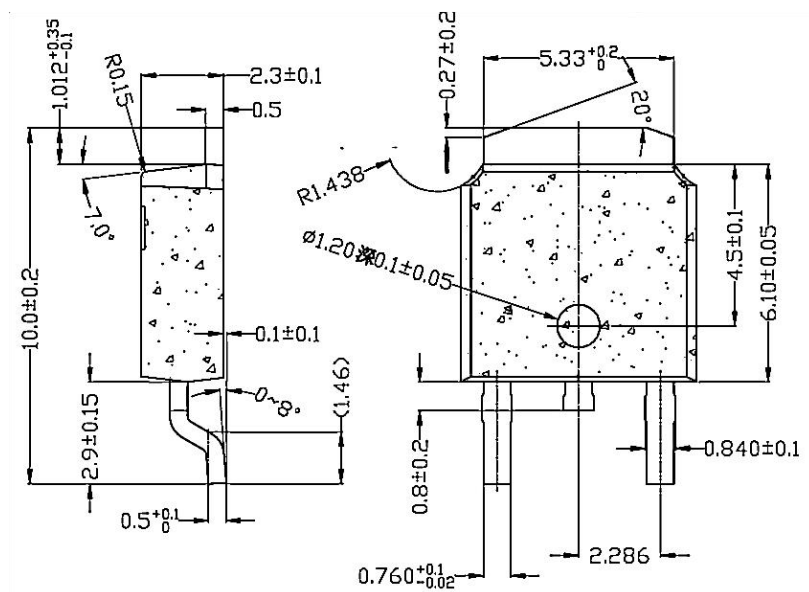




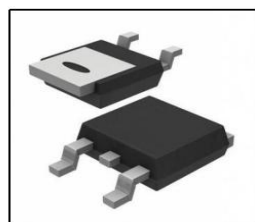
HY20N03

N-CHANNEL POWER MOSFET

TO - 252 PACKAGE OUTLINE DIMENSIONS



TO - 252 PACKING INFORMATION



2500PC
S/reel



2 Reel/BOX



Outer box

5 Inner
Box



Inner box

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)
TO-252	$\Phi 330 \times 20$	2500	2	360*340*50	25000	375*375*280