



HY30N03

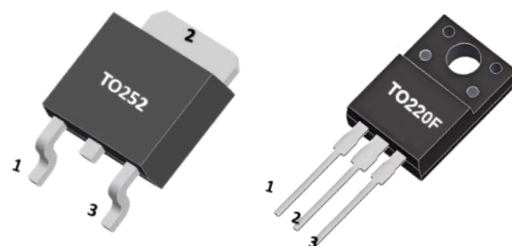
N-CHANNEL POWER MOSFET

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

DESCRIPTION

The HY30N03A uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

The HY30N03A 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
- * Special process technology for high ESD capability
- * Excellent package for good heat dissipation

APPLICATIONS

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

MARKING



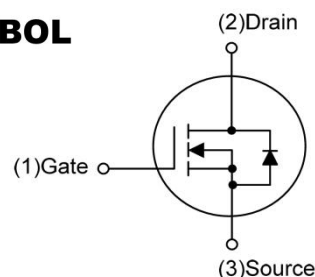
HY : HY LOGO

HY30N03A=Device Code

XXXX=Date Code

Solid Dot=Green molding compound

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		30	A
I_{DM}	Pulsed Drain Current		40	A
EAS	Single Pulsed Avalanche Energy		90	mJ
P_D	Maximum Power Dissipation	TO-220F	47	W
		TO-252	42	
T_J	Storage Temperature		150	$^\circ\text{C}$
T_{STG}	Thermal Resistance From Junction To Ambient		-55~150	$^\circ\text{C}$

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	R _{θJA}	62.5	°C/W
	TO-252		110	
Junction-to-Case	TO-220F	R _{θJC}	2.66	°C/W
	TO-252		3.0	

■ 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			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Drain-source on-state resistance (Note 2)	R _{DS(ON)}	V _{GS} =10V, I _D =15A		20	30	mΩ
		V _{GS} =4.5V, I _D =12.5A		30	45	
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250μA	1.0			V
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =25V f=1.0MHz		1170		pF
Output Capacitance	C _{OSS}			320		
Reverse Transfer Capacitance	C _{RSS}			60		
SWITCHING PARAMETERS						
Total gate charge	Q _g	V _{DS} =15V, V _{GS} =10V I _D =30A		18	35	nC
Gate-source charge	Q _{gs}			5.5		
Gate-drain charge	Q _{gd}			2		
Turn-On Delay Time	t _{d(on)}	V _{DD} =15V, R _L =0.5Ω, I _D = 30A V _{GS} =10V, R _G =7.5Ω		10	20	nS
Turn-On Rise time	t _r			10	20	
Turn-Off Delay Time	t _{d(off)}			25	40	
Turn-Off Fall time	t _f			15	30	
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Continuous drain-source diode forward current	I _S				30	A
Pulsed drain-source diode forward current	I _{SM}				40	A
Drain-source diode forward voltage	V _{SD}	I _F =30A, V _{GS} =0V		1.1	1.5	V
Reverse Recovery Time	t _{RR}	I _F =30A, dI _F /dt=100A/μs		50	100	ns

Notes:

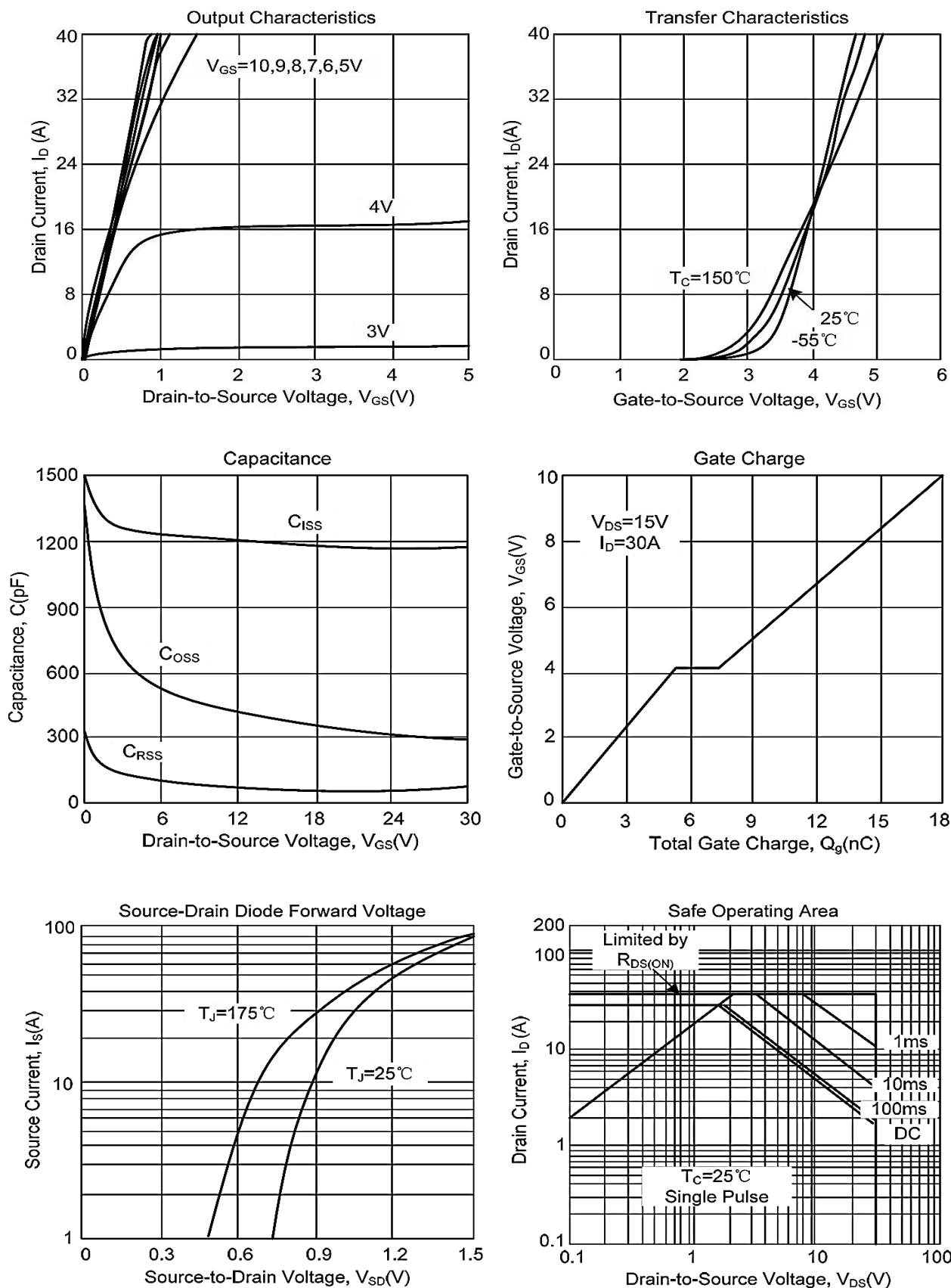
1. Guaranteed by design, not subject to production testing.
2. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%
3. Essentially independent of operating temperature



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■ TYPICAL CHARACTERISTICS

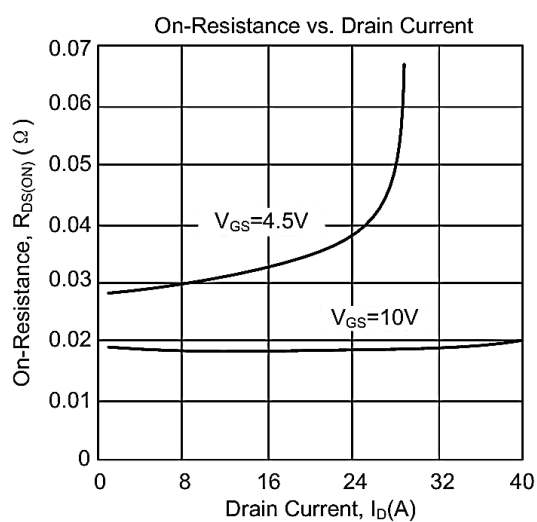
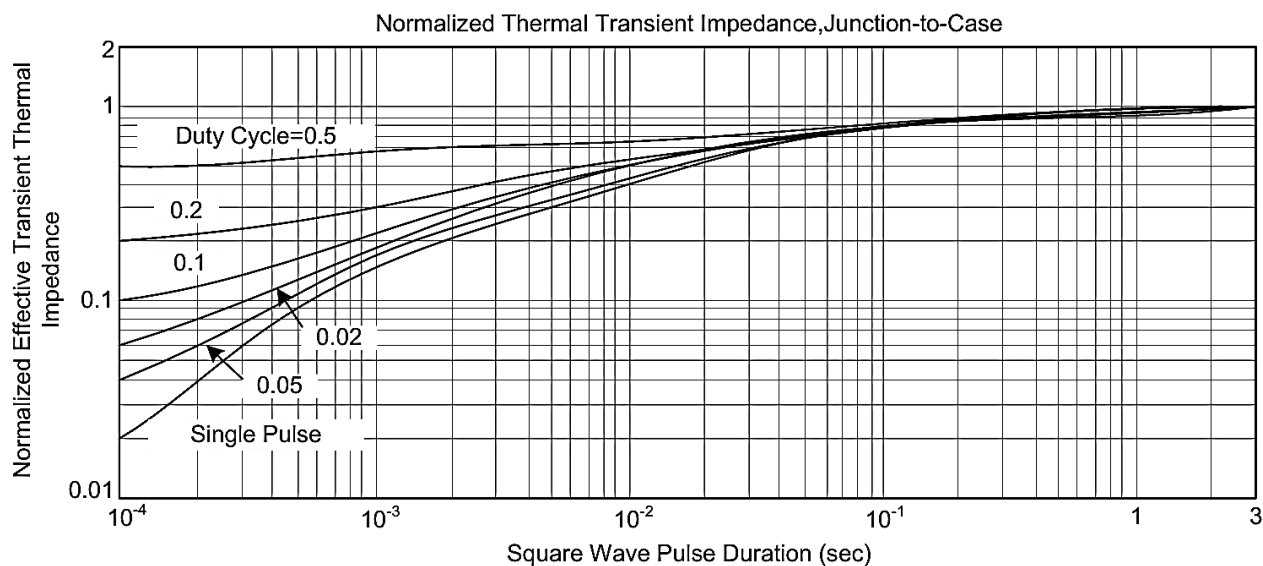




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■ TYPICAL CHARACTERISTICS(Con.t)

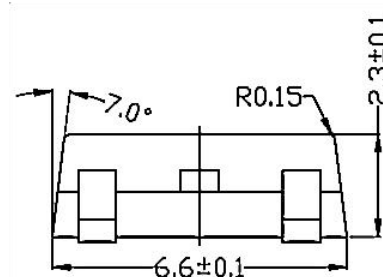
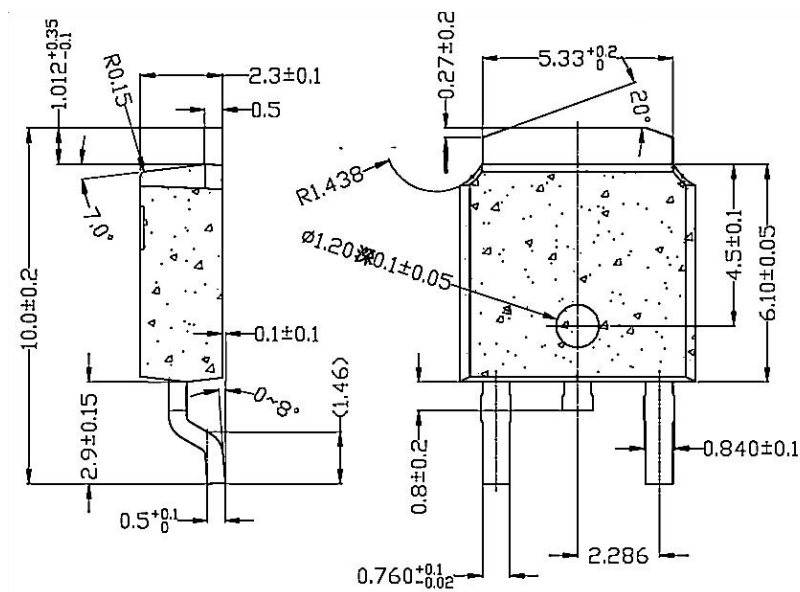




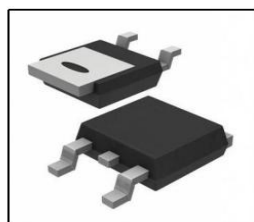
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TO - 252 PACKAGE OUTLINE DIMENSIONS



TO - 252 PACKING INFORMATION



2500PC
S/reel



2 Reel/BOX



Outer box

5 Inner
Box



Inner box

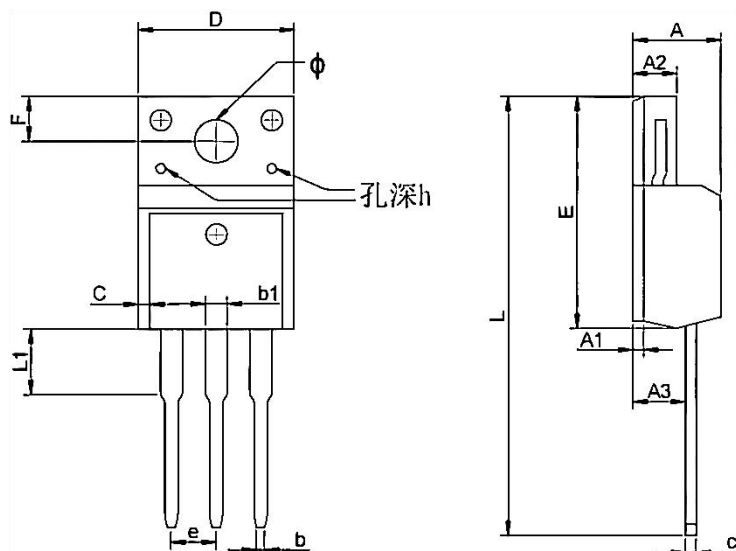
Package version	Reel dimensions $\Phi \times H$ (mm)	Per Reel (pcs)	Reels per box	Inner box dimensions $L \times W \times H$ (mm)	Outer box (pcs)	Outer box dimensions $L \times W \times H$ (mm)
TO-252	$\Phi 330 \times 20$	2500	2	360*340*50	25000	375*375*280



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TO-220F PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.300	4.750	0.169	0.185
A1	1.830 REF		0.072 REF	
A2	2.300	2.850	0.090	0.112
A3	2.500	2.900	0.098	0.114
b	0.400	0.420	0.016	0.016
b1	1.220	1.280	0.048	0.050
C	0.690	0.720	0.027	0.028
c	0.490	0.510	0.019	0.020
D	9.960	10.200	0.392	0.400
E	15.000	15.950	0.588	0.625
e	2.574 TYP		0.101TYP	
F	3.470 REF		0.136 REF	
y	3.200 REF		0.125 REF	
h	0.000	0.300	0.000	0.012
L	28.780	28.900	1.128	1.133
L1	2.990	3.100	0.117	0.122

TO - 220F PACKING INFORMATION



50PCS

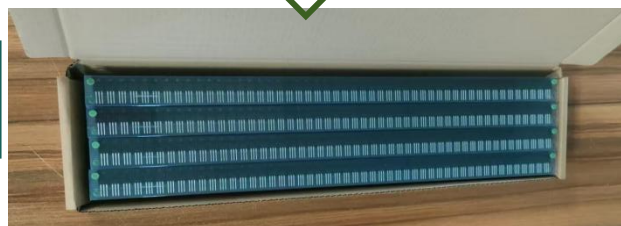


20 Tube



Outer Box

5 Inner
Box



Inner Box

Package version	Tube dimensions LxWxH (mm)	Per Tube (pcs)	Tube per box	Inner box dimensions LxWxH (mm)	PCS/ Inner box	Outer box dimensions LxWxH(mm)	PCS/ Outer box
TO-220F	530*32*7	50	20	580*155*50	1000	602*277*188	5000