

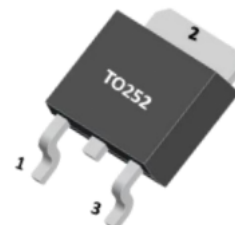
30N02

N-CHANNEL POWER MOSFET

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

DESCRIPTION

The 30N02 meet the ROHS and Green Product requirement with full function reliability approved.



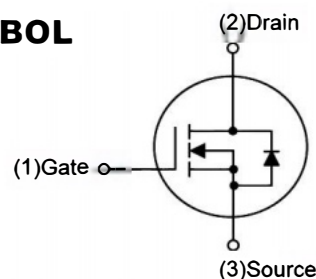
FEATURE

- *Battery switch
- *Load switch
- *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

- *SMPS and general purpose applications
- *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	20	V
V_{GS}	Gate Source Voltage	± 10	V
I_D	Continuous Drain Current	30	A
I_{DM}	Pulsed Drain Current(Note 2)	100	A
EAS	Single Pulsed Avalanche Energy(Note 3)	50	mJ
P_D	Maximum Power Dissipation	7	W
T_J	Storage Temperature	150	$^\circ\text{C}$
T_{STG}	Thermal Resistance From Junction To Ambient	-50~150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient(Note 4)	18	$^\circ\text{C/W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BVDSS	VGS=0V, ID=250μA	20			V
:Zero gate voltage drain current	IDSS	VDS=20V, VGS=0V			1	μA
Gate-Source Leakage Current	IGSS	VGS=±10V, VDS=0V			±100	nA
ON CHARACTERISTICS(Note 3)						
Drain-source on-state resistance	RDS(ON)	VGS=10V, ID=5A		6.7	8	mΩ
		VGS=4.5V, ID=10A		7.6	10	
Gate Threshold Voltage	VGS(TH)	VGS=VDS,ID=250μA	0.5	0.7	1.5	V
Forward tranconductance	gfs	VDS=5V,ID=10A		20		S
DYNAMIC PARAMETERS						
Input Capacitance	CISS	VGS=0V,VDS=15V f=1.0MHz		1200		pF
Output Capacitance	COSS			250		pF
Reverse Transfer Capacitance	CRSS			170		pF
SWITCHING PARAMETERS(Note 4)						
Total gate charge	Qg	VDS=20V,VGS=4.5V ID=30A(Note 3)		14.4	20	nC
Gate-source charge	Qgs			4.0		
Gate-drain charge	Qgd			8.5		
Turn-On Delay Time	t(on)	VDS=20V,RG=2.5Ω VGS=4.5V,ID=15A		12.5		nS
Rise time	tr			115		
Turn-On Delay Time	t(off)			15		
Fall time	tf			17		
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Drain-Source Diode Forward Voltage	VSD	IS=10A,VGS=0V(Note 3)			1.2	V
Reverse Recovery Stored Charge	QRR			0.013		μC

Notes: 1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.

2. Switching characteristics are independent of operating junction temperatures.

TYPICAL CHARACTERISTICS

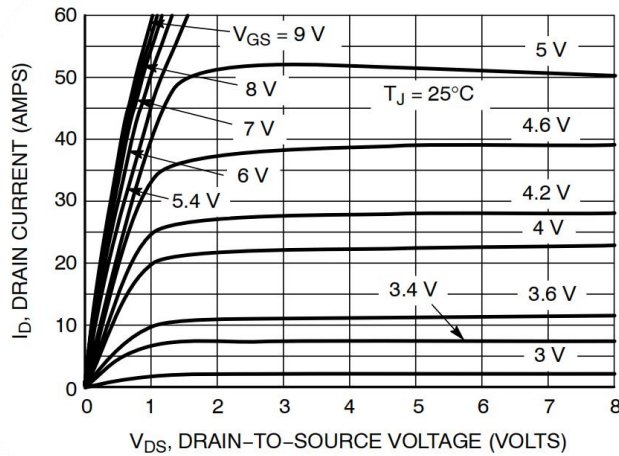


Figure 1. On-Region Characteristics

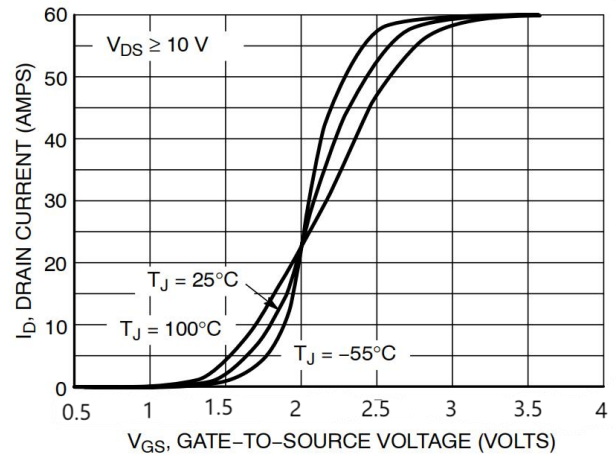


Figure 2. Transfer Characteristics

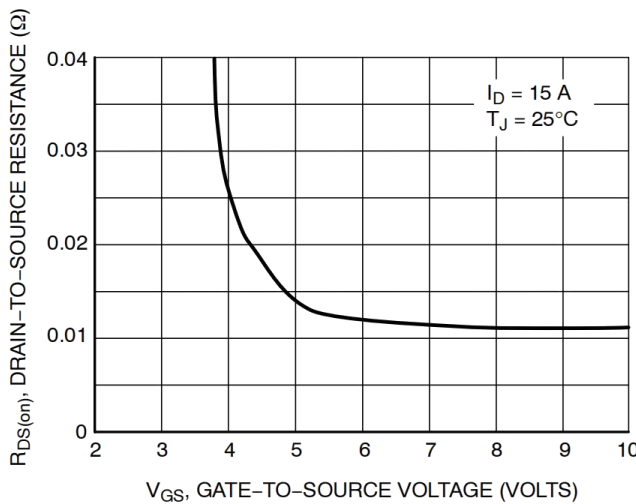


Figure 3. On-Resistance versus Gate-to-Source Voltage

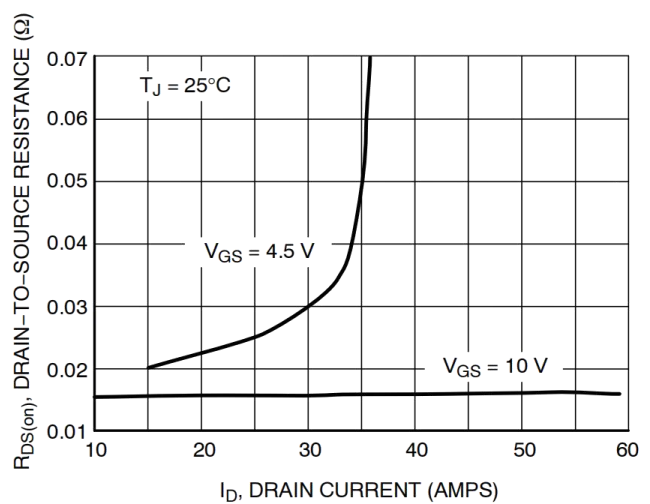


Figure 4. On-Resistance versus Drain Current and Gate Voltage

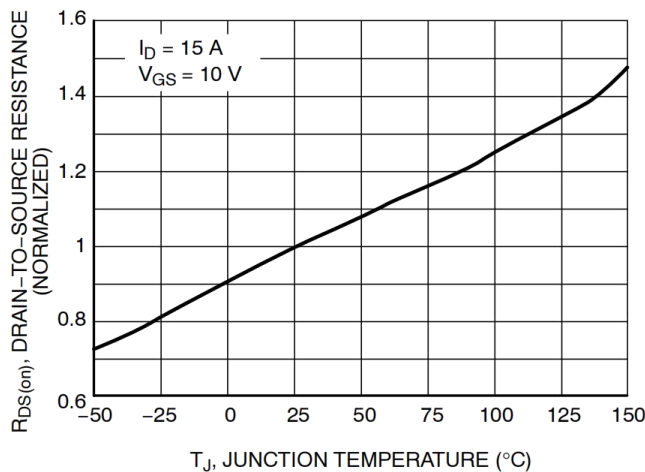


Figure 5. On-Resistance Variation with Temperature

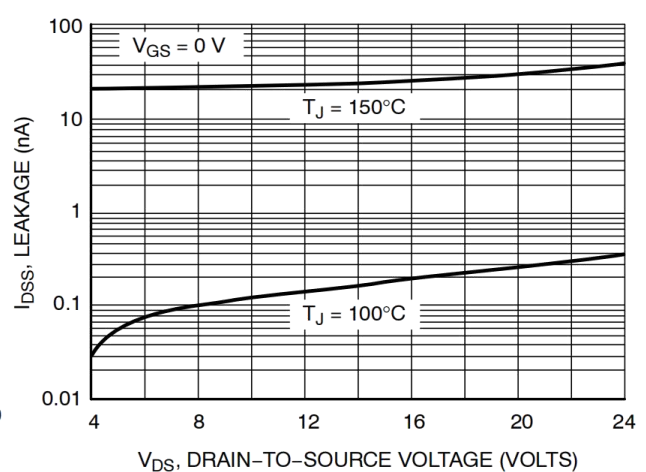


Figure 6. Drain-to-Source Leakage Current versus Voltage

■ TYPICAL CHARACTERISTICS(Con.t)

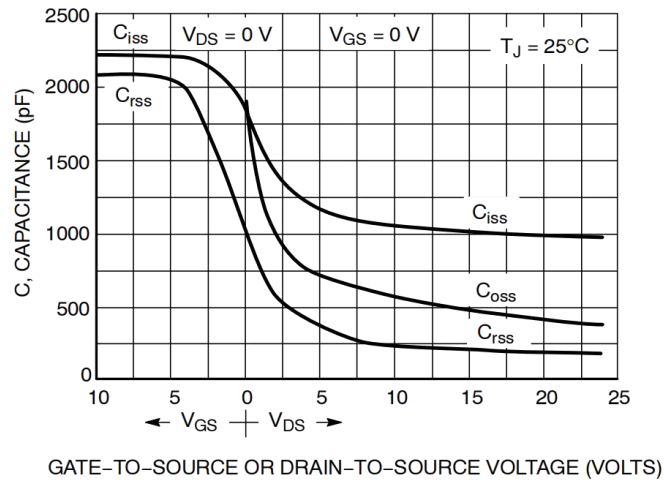


Figure 7. Capacitance Variation

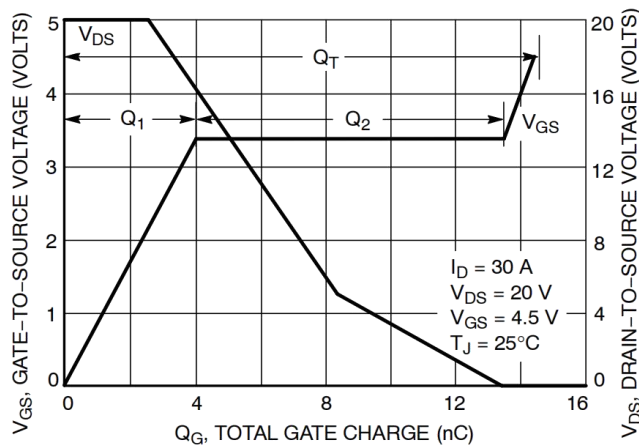


Figure 8. Gate-to-Source and Drain-to-Source Voltage versus Total Charge

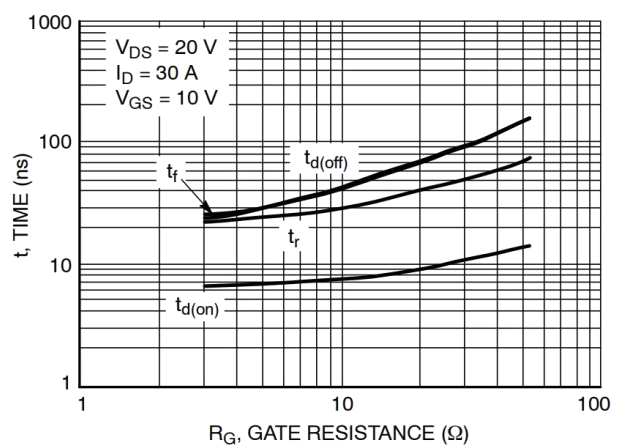


Figure 9. Resistive Switching Time Variation versus Gate Resistance

DRAIN-TO-SOURCE DIODE CHARACTERISTICS

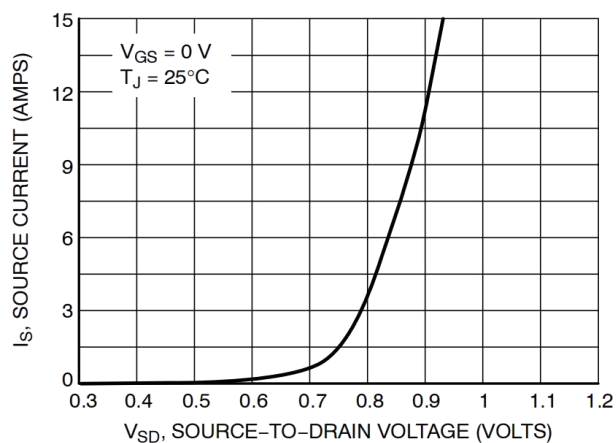
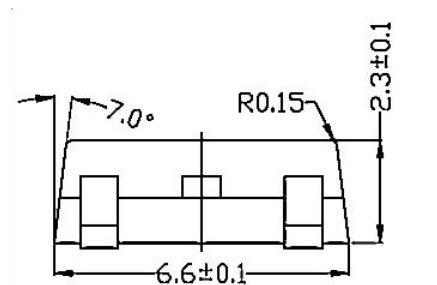
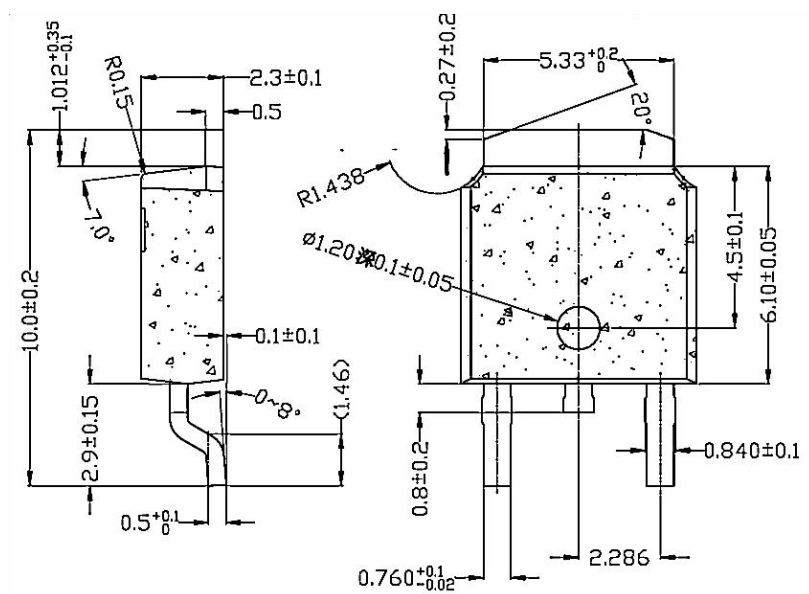


Figure 10. Diode Forward Voltage versus Current

30N02

N-CHANNEL POWER MOSFET

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