

Descriptions

This 40A, 20V N-Channel MOSFET in a TO-252 Plastic Package.

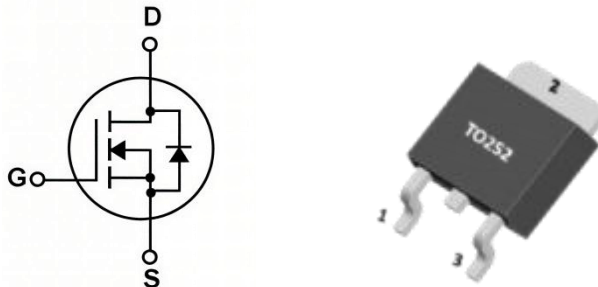
Features

- Battery switch
- Load switch
- High density cell design for ultra low RDS(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

Equivalent Circuit & Pinning



Absolute Maximum Ratings(TA=25°C)

SYMBOL	PARAMETER	VALUE	UNIT
VDS	Drain-Source Voltage	20	V
VGS	Gate Source Voltage	±10	V
ID	Continuous Drain Current	40	A
IDM	Pulsed Drain Current(Note 2)	100	A
EAS	Single Pulsed Avalanche Energy(Note 3)	50	mJ
PD	Maximum Power Dissipation	7	W
TJ	Storage Temperature	150	°C
TSTG	Thermal Resistance Fr .00m Junction To Ambient	-50~150	°C
RθJA	Thermal Resistance from Junction to Ambient(Note 4)	18	°C/W

Electrical Characteristics(Ta=25°C)

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=40A(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=20A		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.

Electrical Characteristic Curve

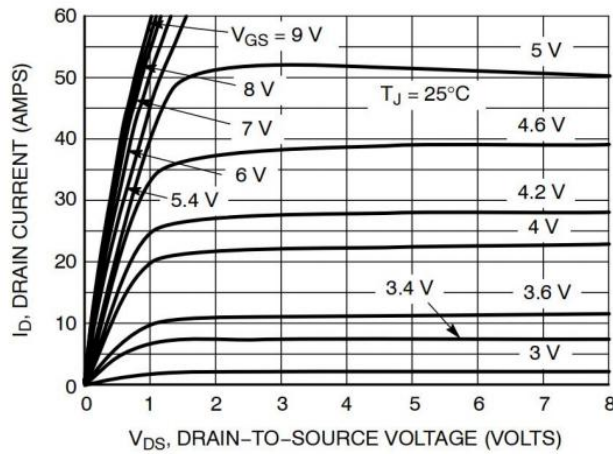


Figure 1. On-Region Characteristics

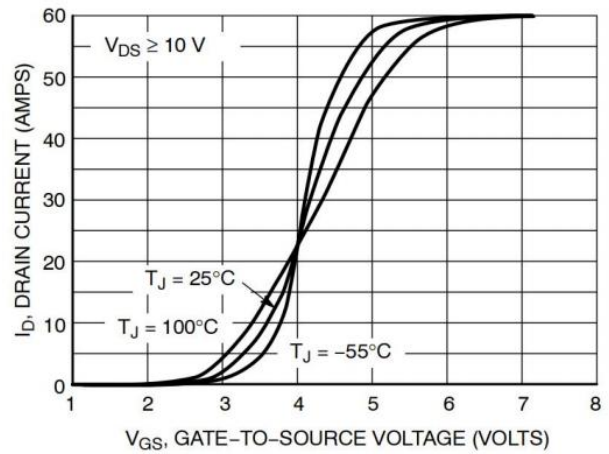


Figure 2. Transfer Characteristics

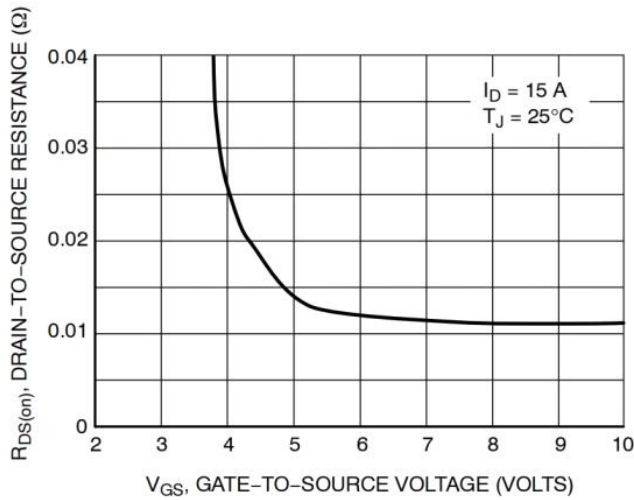


Figure 3. On-Resistance versus Gate-to-Source Voltage

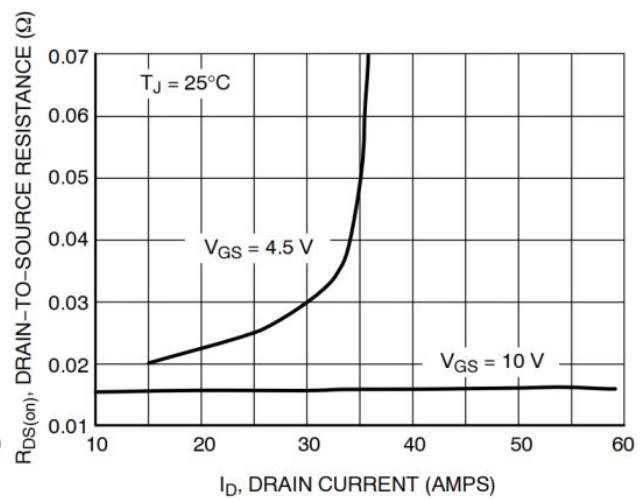


Figure 4. On-Resistance versus Drain Current and Gate Voltage

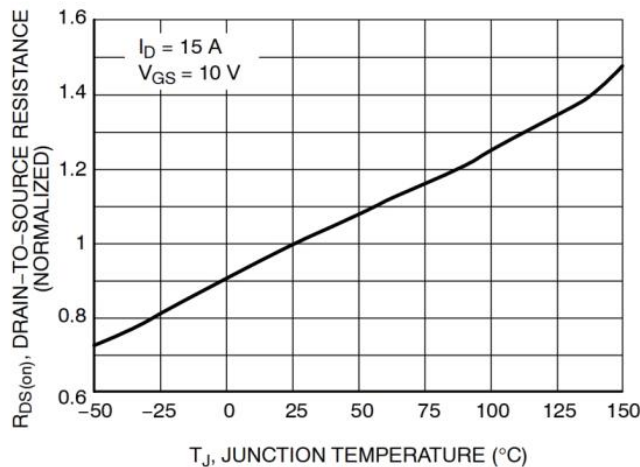


Figure 5. On-Resistance Variation with Temperature

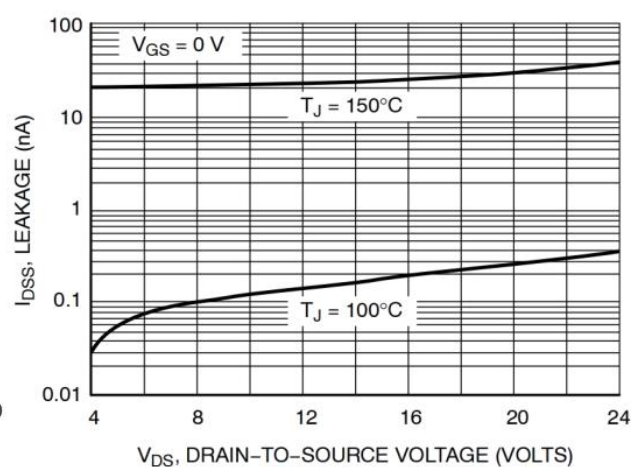


Figure 6. Drain-to-Source Leakage Current versus Voltage

Electrical Characteristic Curve

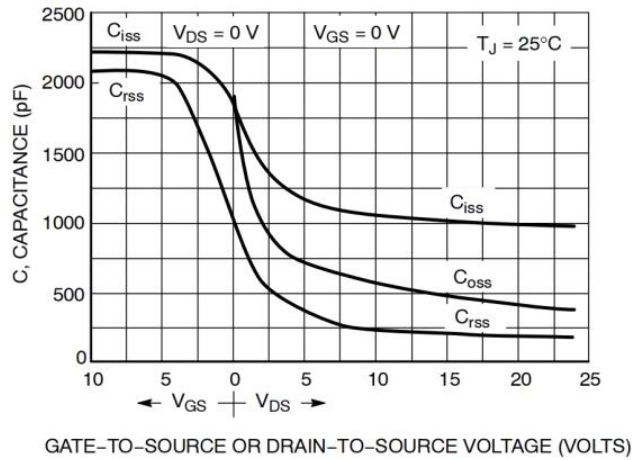


Figure 7. Capacitance Variation

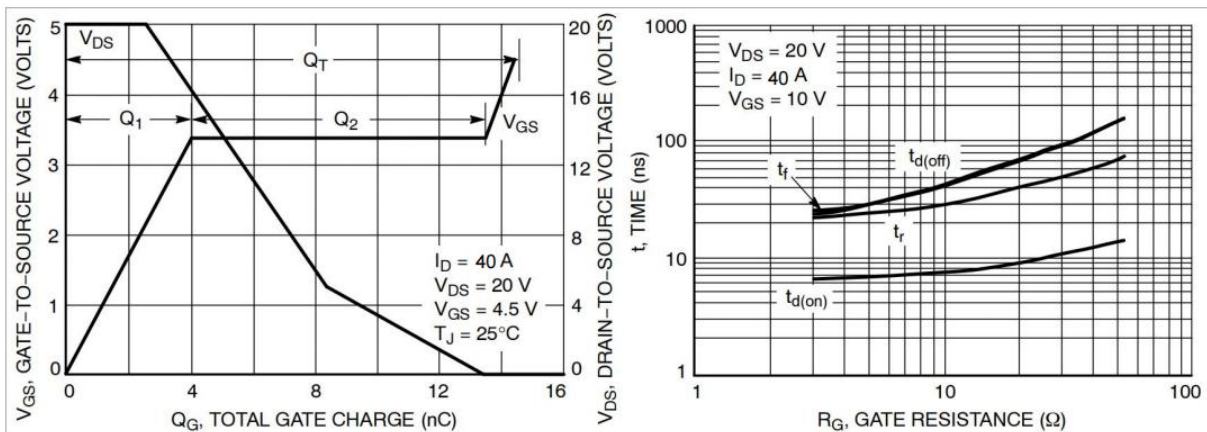


Figure 8. Gate-to-Source and Drain-to-Source Voltage versus Total Charge

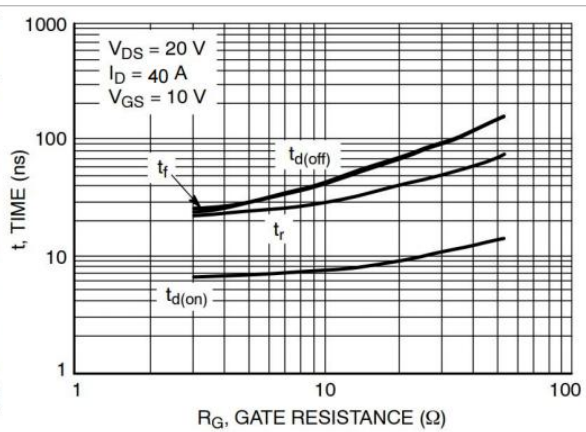


Figure 9. Resistive Switching Time Variation versus Gate Resistance

DRAIN-TO-SOURCE DIODE CHARACTERISTICS

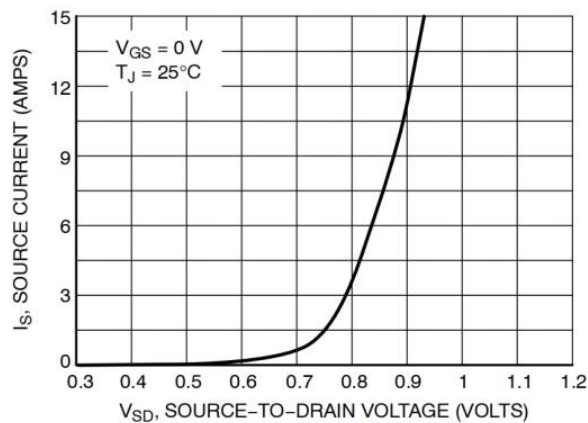
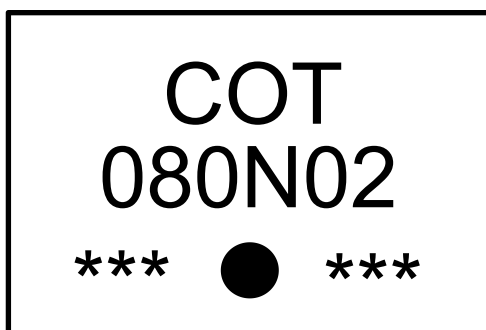


Figure 10. Diode Forward Voltage versus Current

Marking Instructions



Note:

COT:

Company Logo

080N02:

Product Type.

*****:

Lot No. Code, code change with Lot No.

Packaging SPEC

REEL

Package version	Reel dimensions	Per reel (pcs)	Reels per box	Inner box dimensions	Outer Box(pcs)	Outer box dimensions
TO-252	330*20	2500	2	360*340*50	25000	375*375*280

Package Outline Dimensions TO - 252

