

## Features

- Low drain-source on-resistance:  $R_{DS(ON)}=0.54\Omega$  (typ)
- Easy to control gate switching
- Enhancement mode:  $V_{th} = 2\text{V}$  to  $4\text{V}$
- 100% avalanche tested
- RoHS compliant

## Key Performance Parameters



Parameter	Value	Unit
$V_{DS} @ T_{j,max}$	700	V
$R_{DS(ON),max}$	600	m $\Omega$
$I_D$	8	A
$Q_{g,typ}$	8	nC
$I_{DM}$	24	A

## Applications

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)
- Charger, Lighting



## Absolute Maximum Ratings ( $T_c=25^\circ\text{C}$ , unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	$V_{DS}$	700	V
Gate-Source Voltage	$V_{GS}$	$\pm 30$	V
Continuous Drain Current <sup>1</sup>	$I_D$	8	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	24	A
Single Pulse Avalanche Energy <sup>3</sup>	$E_{AS}$	624	mJ
Total Power Dissipation <sup>4</sup>	$P_D$	86	W
Storage Temperature Range	$T_{STG}$	-55 to 150	$^\circ\text{C}$
Operating Junction Temperature Range	$T_J$	-55 to 150	$^\circ\text{C}$

## Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-Ambient (Max)	$R_{\theta JA}$	62	$^\circ\text{C/W}$
Thermal Resistance Junction-Case (Max)	$R_{\theta JC}$	1.45	$^\circ\text{C/W}$

**Electrical Characteristics (T<sub>J</sub>=25°C, unless otherwise noted)**

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =10mA	700	---	---	V
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =10A	---	540	600	mΩ
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250μA	2.5	---	4.5	V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =700V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	---	---	1	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±30V, V <sub>DS</sub> =0V	---	---	±100	nA
Gate Resistance	R <sub>G</sub>	f = 1.0MHz, open drain	---	24	---	Ω
Total Gate Charge	Q <sub>g</sub>	V <sub>DD</sub> =400V, V <sub>GS</sub> =10V, I <sub>D</sub> =3A	---	8	---	nC
Gate-Source Charge	Q <sub>gs</sub>		---	2.6	---	
Gate-Drain Charge	Q <sub>gd</sub>		---	1.7	---	
Turn-On Delay Time	T <sub>d(on)</sub>	V <sub>DD</sub> =400V, V <sub>GS</sub> =10V, R <sub>G</sub> =6.8Ω, I <sub>D</sub> =3A	---	26.8	---	ns
Rise Time	T <sub>r</sub>		---	24.8	---	
Turn-Off Delay Time	T <sub>d(off)</sub>		---	128	---	
Fall Time	T <sub>f</sub>		---	21	---	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V, f=10kHz	---	595	---	pF
Output Capacitance	C <sub>oss</sub>		---	76	---	
Reverse Transfer Capacitance	C <sub>rss</sub>		---	3.6	---	

**Drain-Source Diode Characteristics**

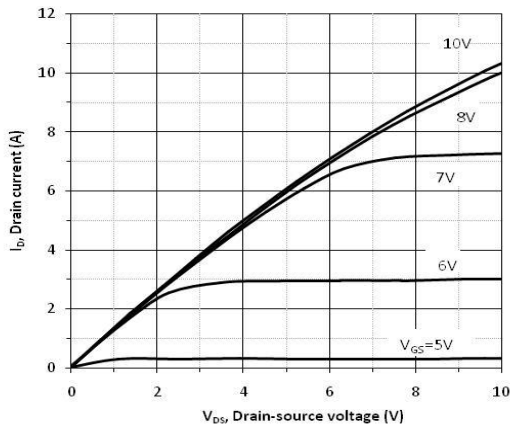
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage <sup>2</sup>	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>F</sub> =1A, T <sub>J</sub> =25°C	---	0.76	---	V
Reverse recovery time	t <sub>rr</sub>	V <sub>R</sub> =400V, I <sub>F</sub> =3A, diF/dt=100A/μs	---	174	---	ns
Reverse recovery charge	Q <sub>rr</sub>		---	1.2	---	μC
Peak reverse recovery current	I <sub>rrm</sub>		---	13.5	---	A

**Note:**

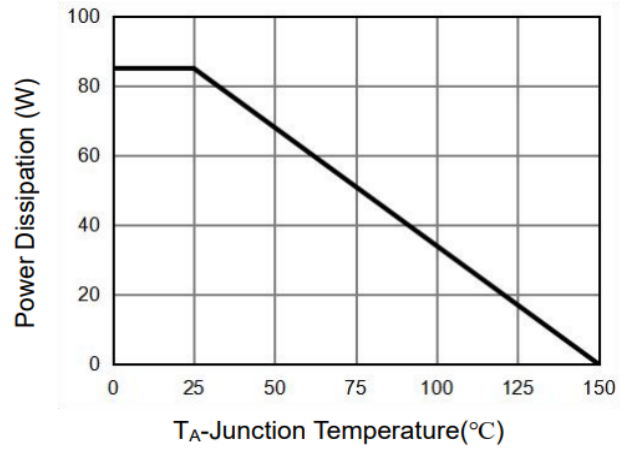
- Limited by T<sub>J,max</sub>. Maximum Duty Cycle D = 0.50
- Pulse width t<sub>p</sub> limited by T<sub>J,max</sub>
- Identical low side and high side switch with identical R<sub>G</sub>

**Typical Characteristics**

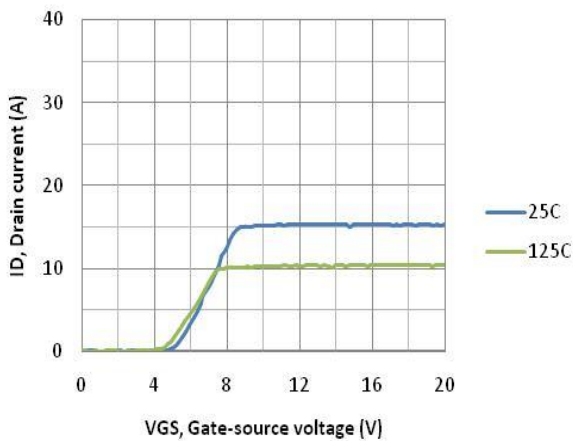
**Diagram 1: Typ. output characteristics**



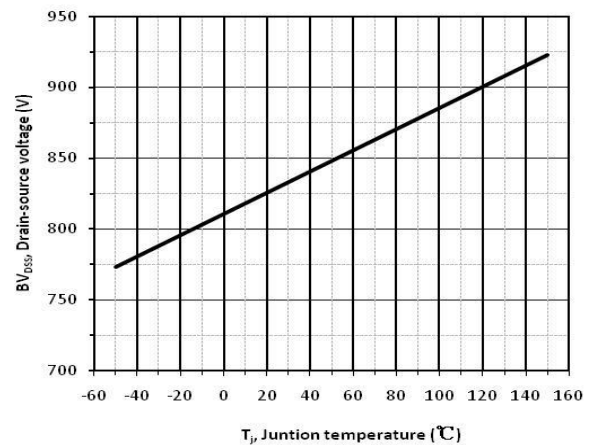
**Diagram 2: Maximum Power Dissipation**



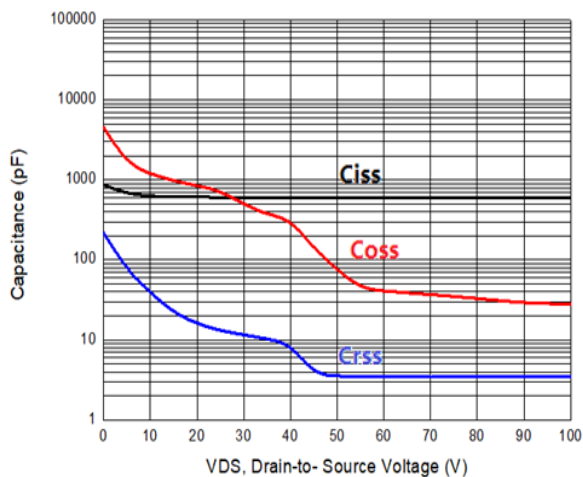
**Diagram 3: Typ. transfer characteristics**



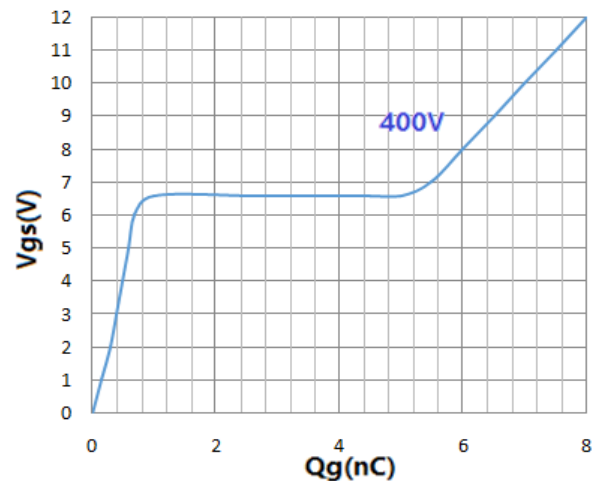
**Diagram 4: Drain-source breakdown voltage**



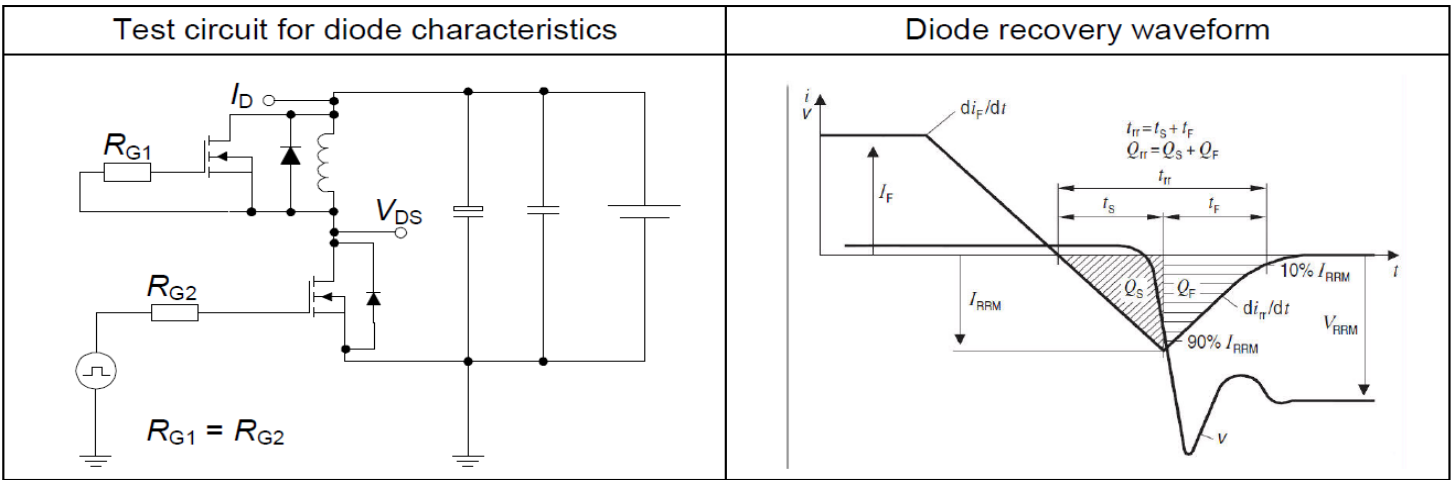
**Diagram 5: Typ. capacitances**



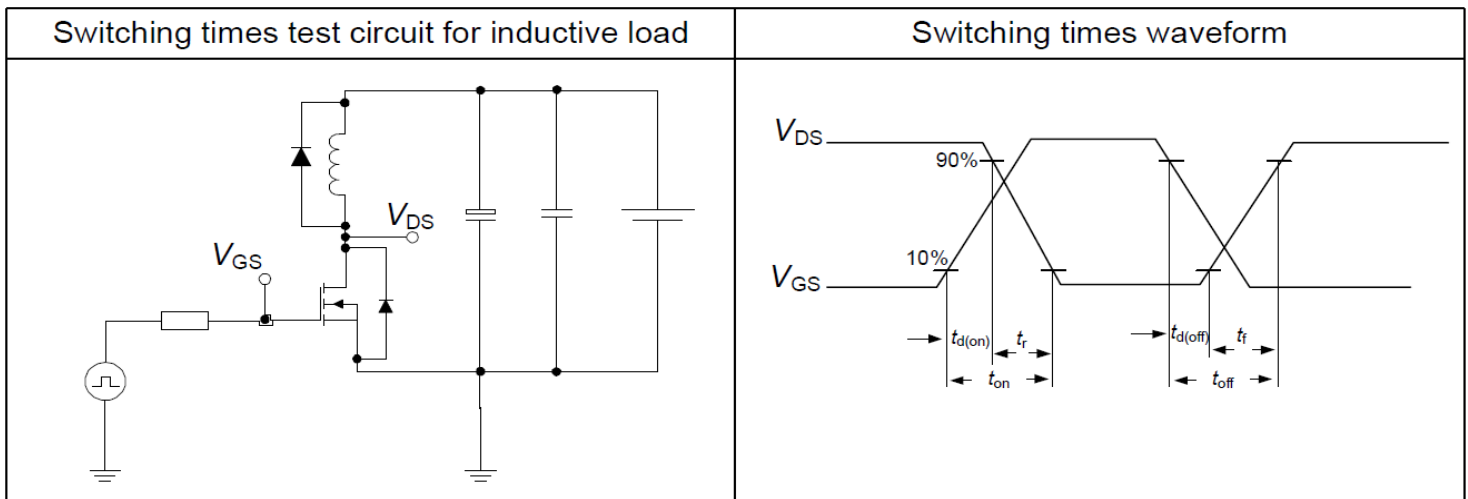
**Diagram 6: Typ. gate charge**



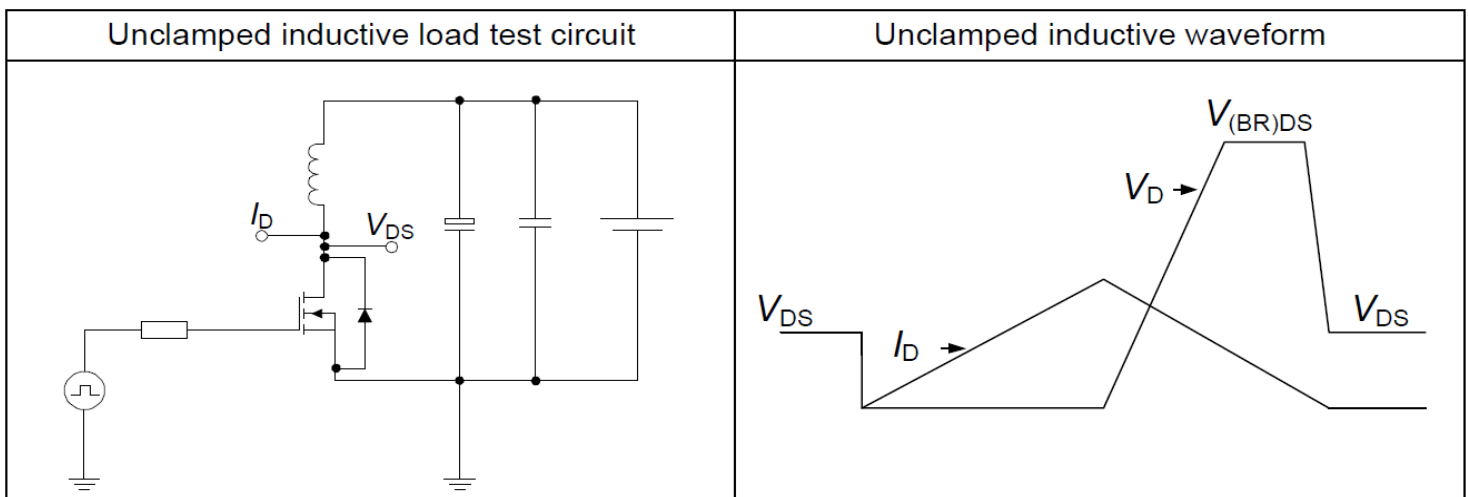
**Table 7 Diode characteristics**



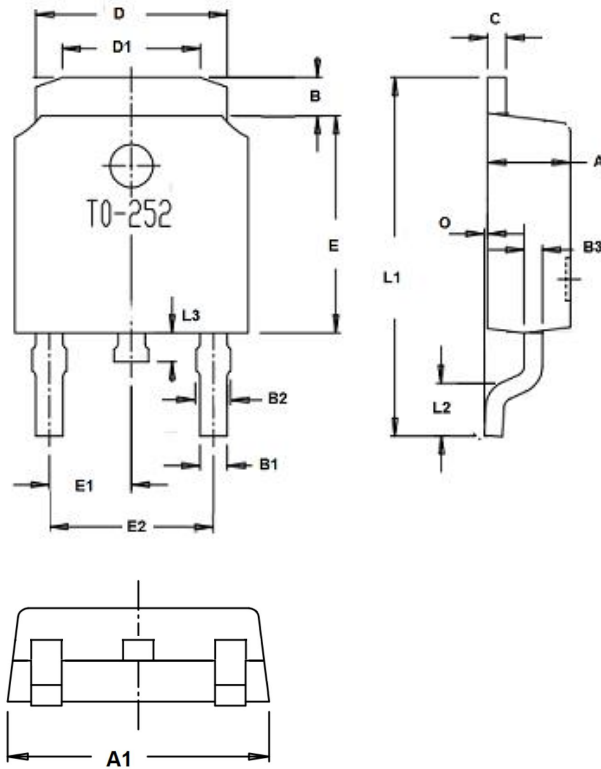
**Table 8 Switching times**



**Table 9 Unclamped inductive load**



**TO-252 Package Outline Dimensions**



Dim.	Min.	Max.
A	2.1	2.5
A1	6.3	6.9
B	0.96	1.42
B1	0.74	0.86
B2	0.74	0.94
C	Typ0.5	
D	5.33	5.53
D1	3.65	4.05
E	6.0	6.2
E1	Typ2.29	
E2	Typ4.58	
O	0	0.15
L1	9.9	10.5
L2	Typ1.65	
L3	0.6	1.0
All Dimensions in millimeter		

## Printing Information

XXXXXXX

====Material Code

XXYY

====XX Representative Year  
YY Representative Weeks