

Features

- Fast switching
- Low Gate Charge
- Improved dv/dt capability
- 100% avalanche tested
- Green Device Available

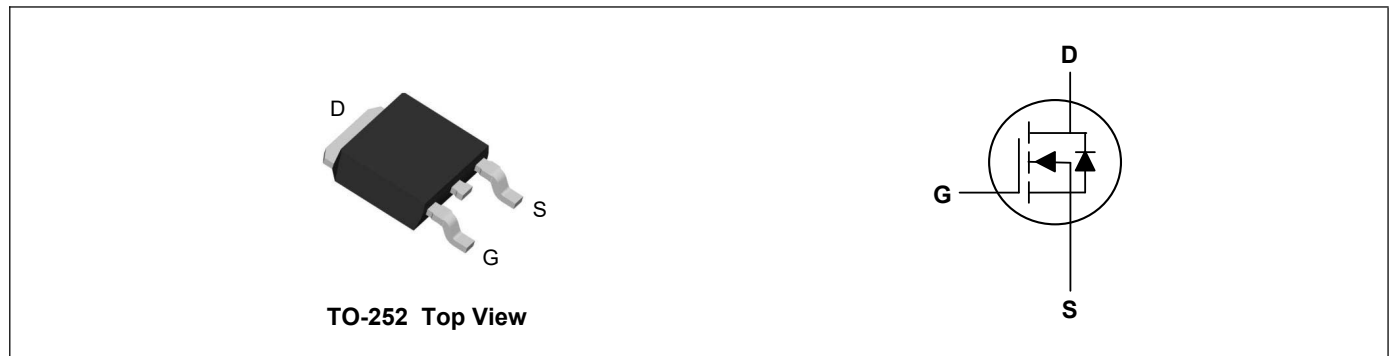
Applications

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)
- AC to DC Converters

Product Summary



V_{DS}	600	V
I_D	4	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	2.7	Ω



Absolute Maximum Ratings($T_C=25^\circ C$, unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current	I_D	4	A
Pulsed Drain Current ²	I_{DM}	16	A
Single Pulse Avalanche Energy ³	E_{AS}	240	mJ
Avalanche Current	I_{AS}	4	A
Repetitive Avalanche Energy	E_{AR}	20	mJ
Total Power Dissipation ⁴	P_D	80	W
Storage Temperature Range	T_{STG}	-55 to 150	$^\circ C$
Operating Junction Temperature Range	T_J	-55 to 150	$^\circ C$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	---	60	$^\circ C/W$
Thermal Resistance Junction-Case	$R_{\theta JC}$	---	1.66	$^\circ C/W$

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	600	---	---	V
Static Drain-Source On-Resistance ²	R _{DS(ON)}	V _{GS} =10V, I _D =2A	---	2.4	2.7	Ω
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	2	3	4	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =600V, V _{GS} =0V, T _J =25°C	---	---	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±30V, V _{DS} =0V	---	---	±100	nA
Total Gate Charge	Q _g	V _{DD} =400V, V _{GS} =10V, I _D =4A	---	10	---	nC
Gate-Source Charge	Q _{gs}		---	2	---	
Gate-Drain Charge	Q _{gd}		---	5	---	
Turn-On Delay Time	T _{d(on)}	V _{DD} =325V, R _G =25Ω, I _D =4A	---	20	---	ns
Rise Time	T _r		---	55	---	
Turn-Off Delay Time	T _{d(off)}		---	70	---	
Fall Time	T _f		---	50	---	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	490	---	pF
Output Capacitance	C _{oss}		---	45	---	
Reverse Transfer Capacitance	C _{rss}		---	6	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ¹	I _S	T _C =25°C	---	---	4	A
Pulsed Source Current ²	I _{SM}		---	---	17.6	A
Diode Forward Voltage ²	V _{SD}	V _{GS} =0V, I _S =4A, T _J =25°C	---	---	1.4	V
Reverse Recovery Time	t _{rr}	V _R =400V, I _F =4A, di _F /dt=100A/μs	---	390	---	ns
Reverse Recovery Charge	Q _{rr}		---	2.2	---	uC

Note:

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%
- 3.The EAS data shows Max. rating. The test condition is V_{DD}=50V, V_{GS}=10V, L=10mH
- 4.The power dissipation is limited by 150°C junction temperature

Typical Characteristics

Figure 1. Output Characteristics

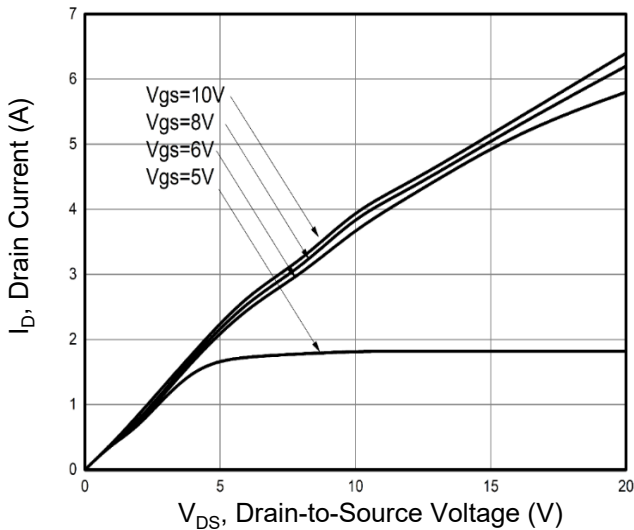


Figure 2. Transfer Characteristics

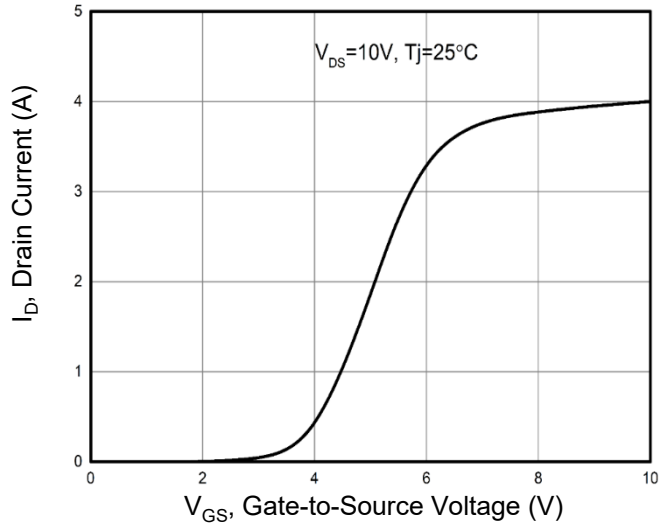


Figure 3. Drain Current vs. Temperature

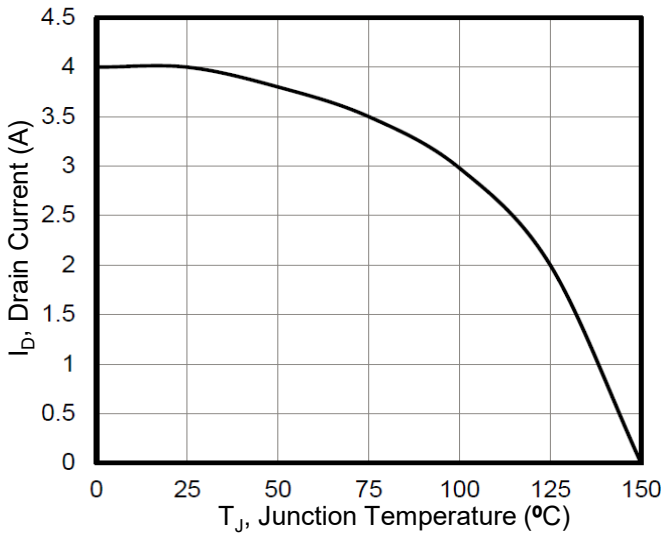


Figure 4. Capacitance

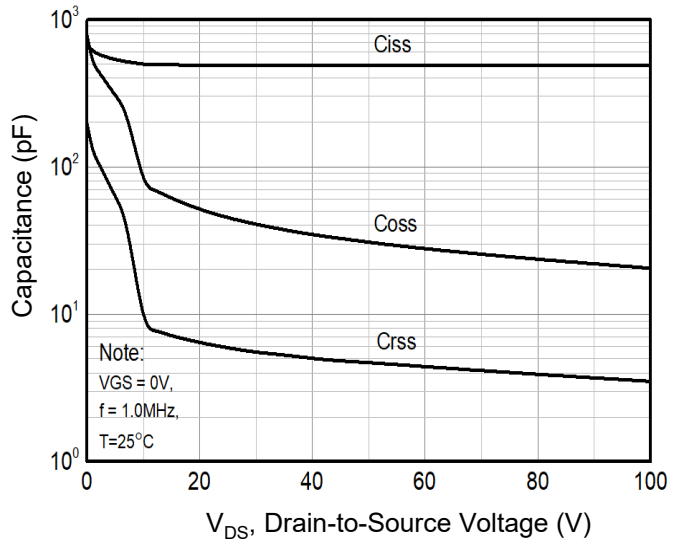


Figure 5. Gate Charge

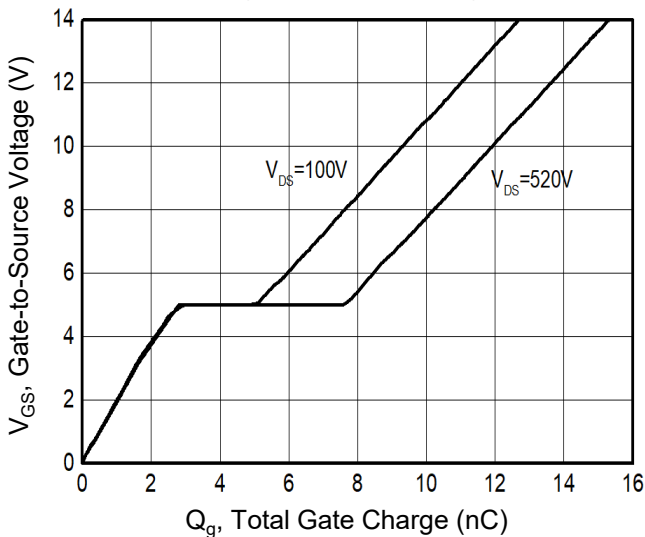


Figure 6. Body Diode Forward Voltage

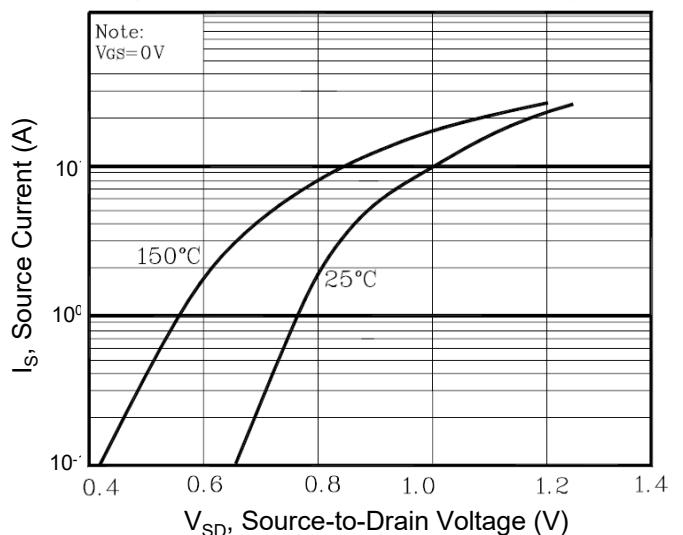


Figure 7. On-Resistance vs. Temperature

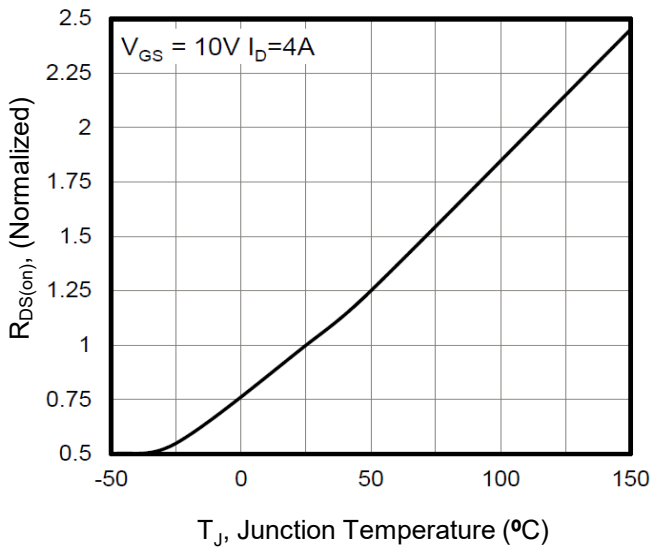


Figure 8. BV_{DSS} vs. Temperature

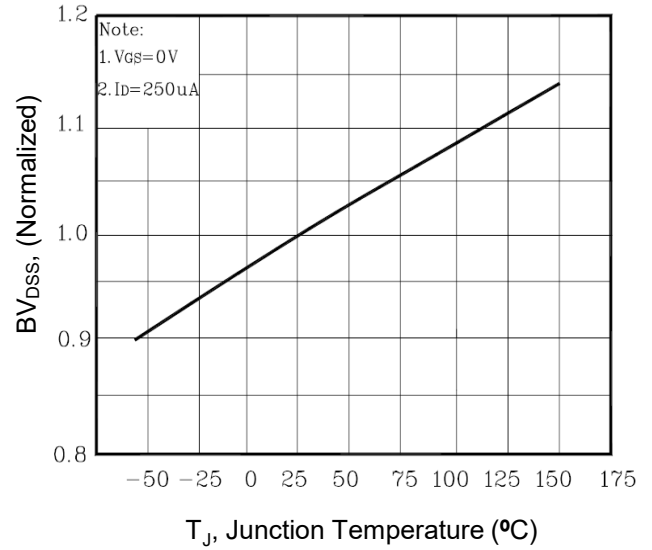
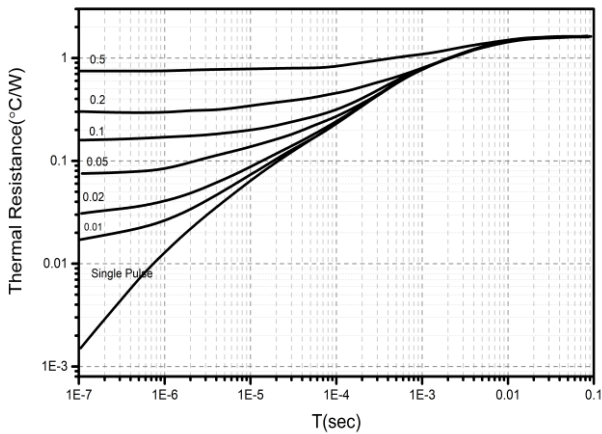
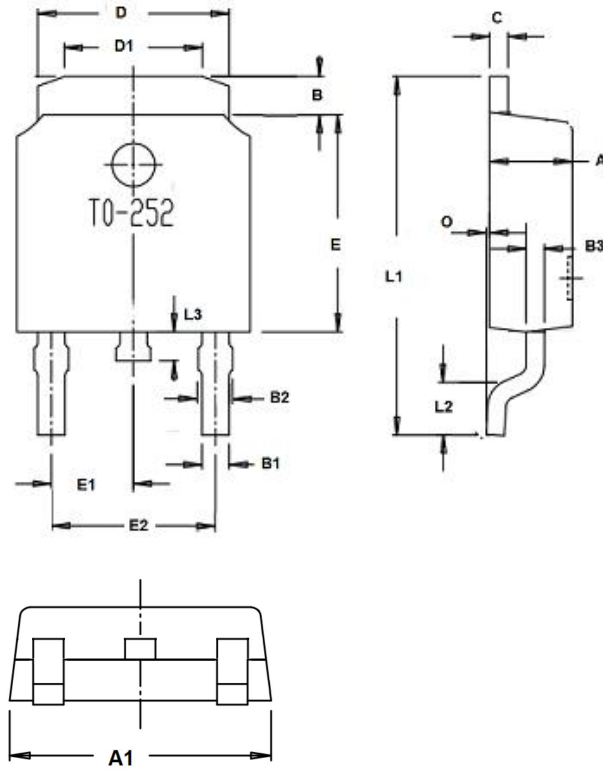


Figure 9. Transient Thermal Impedance



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		