

Description

- 100% EAS Guaranteed
- Low $R_{DS(ON)}$
- Low Gate Charge
- RoHs and Halogen-Free Compliant

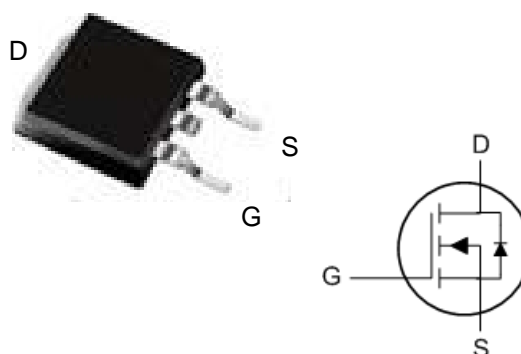
Product Summary

BVDSS	$R_{DS(ON)}$	ID
100V	11.5mΩ	58A

Applications

- High Frequency Switching and Synchronous Rectification.
- DC-DC Converter.

TO-252 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current ¹	58	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current ¹	36.5	A
I_{DM}	Pulsed Drain Current ²	130	A
EAS	Single Pulse Avalanche Energy ³	33	mJ
I_{AS}	Avalanche Current	15	A
$P_D@T_C=25^{\circ}C$	Total Power Dissipation ⁴	73	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	---	50	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	1.7	°C/W

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	100	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V , I _D =20A	---	8	11.5	mΩ
	Static Drain-Source On-Resistance ²	V _{GS} =4.5V , I _D =10A	---	11.6	15	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.2	---	2.4	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =80V , V _{GS} =0V , T _J =25°C	---	---	1	uA
		V _{DS} =80V , V _{GS} =0V , T _J =55°C	---	---	5	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V , V _{DS} =0V	---	---	±100	nA
Q _g	Total Gate Charge (10V)	V _{DS} =50V , V _{GS} =10V , I _D =20A	---	43	---	nC
Q _g	Total Gate Charge (4.5V)		---	18.5	---	
Q _{gs}	Gate-Source Charge		---	8.5	---	
Q _{gd}	Gate-Drain Charge		---	10.3	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =50V , V _{GS} =10V , R _G =3.3Ω, I _D =20A	---	10	---	ns
T _r	Rise Time		---	7	---	
T _{d(off)}	Turn-Off Delay Time		---	50	---	
T _f	Fall Time		---	11	---	
C _{iss}	Input Capacitance	V _{DS} =50V , V _{GS} =0V , f=1MHz	---	3150	---	pF
C _{oss}	Output Capacitance		---	695	---	
C _{rss}	Reverse Transfer Capacitance		---	25	---	

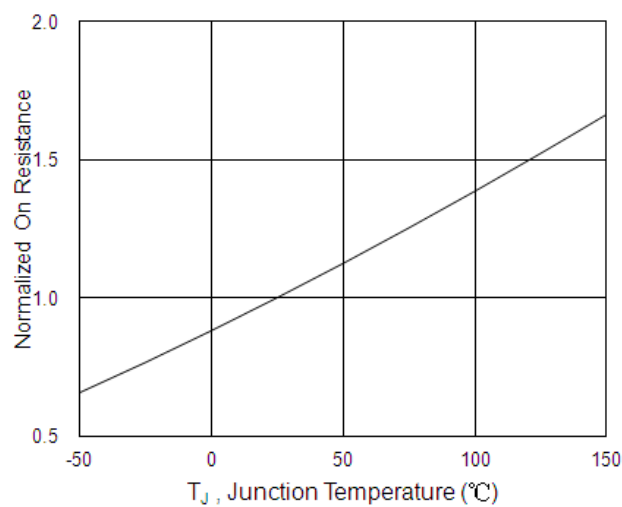
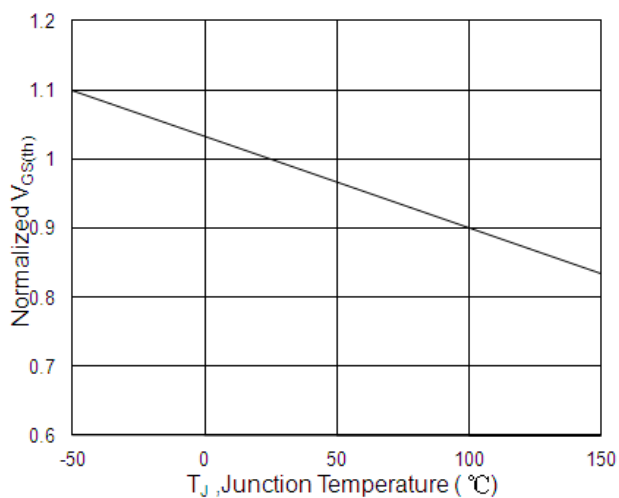
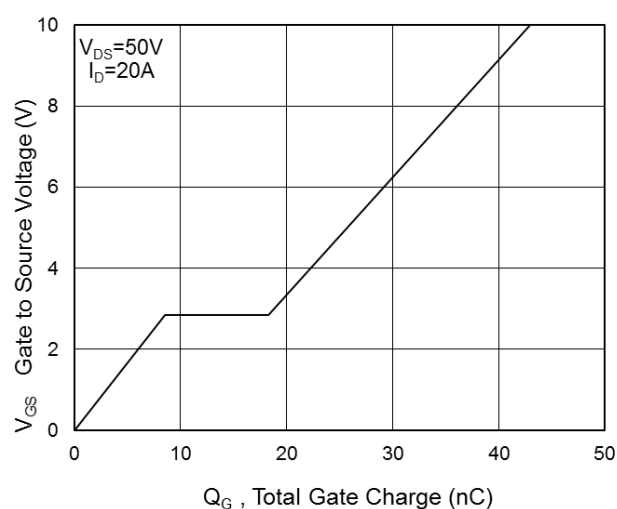
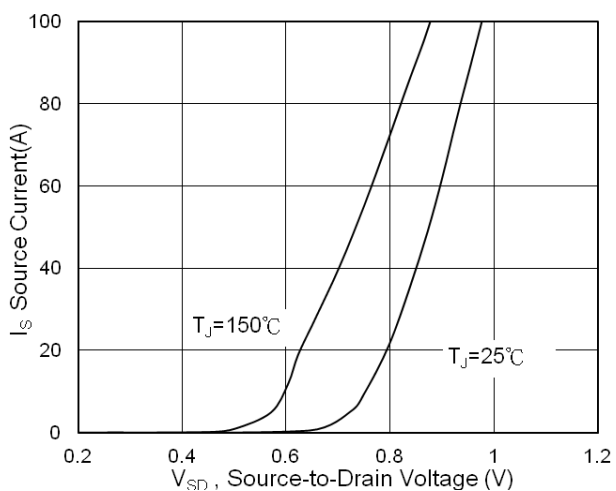
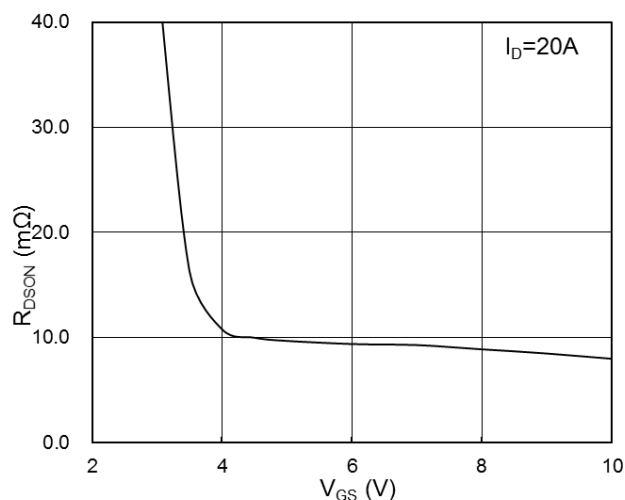
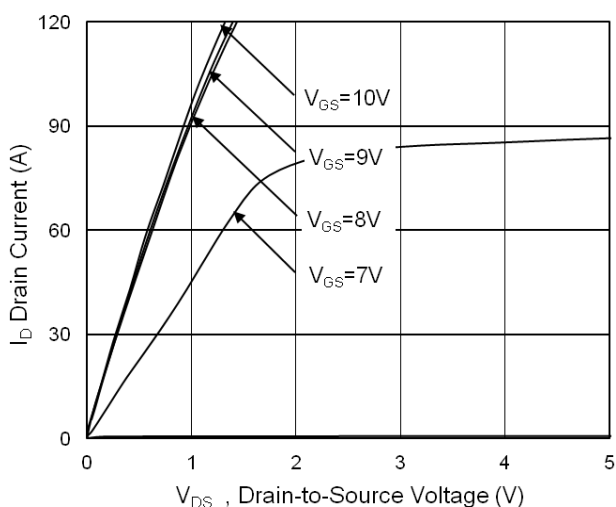
Diode Characteristics

I _S	Continuous Source Current ^{1,5}	V _G =V _D =0V , Force Current	---	---	58	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V , I _S =1A , T _J =25°C	---	---	1.2	V
t _{rr}	Reverse Recovery Time	I _F =20A , di/dt=100A/μs ,	---	45	---	nS
Q _{rr}	Reverse Recovery Charge	T _J =25°C	---	165	---	nC

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}=25V,V_{GS}=10V,L=0.3mH,I_{AS}=15A
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I_D and I_S , in real applications , should be limited by total power dissipation.

Typical Characteristics



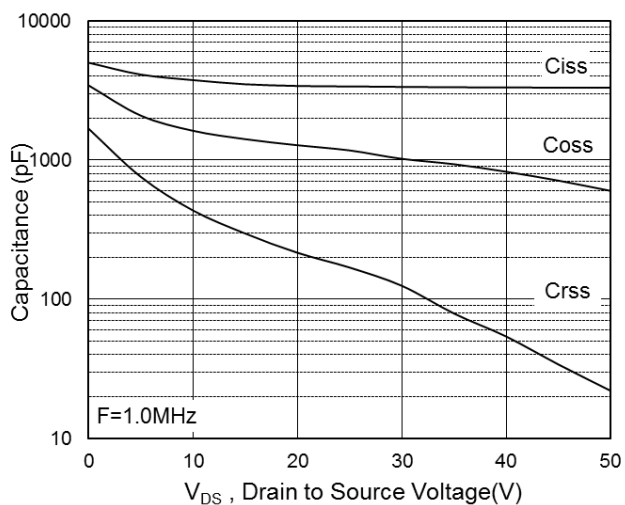


Fig.7 Capacitance

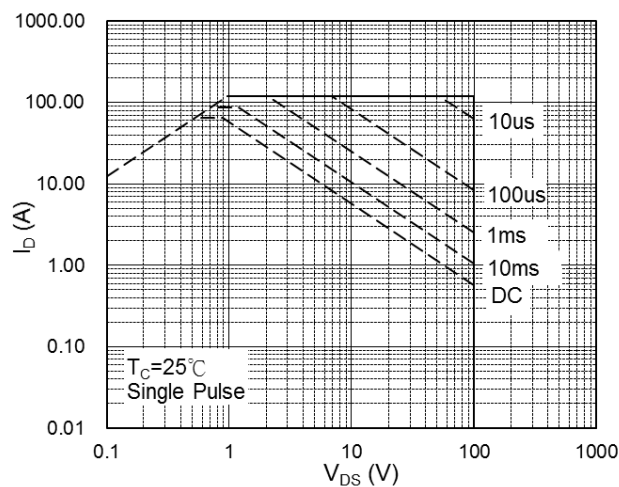


Fig.8 Safe Operating Area

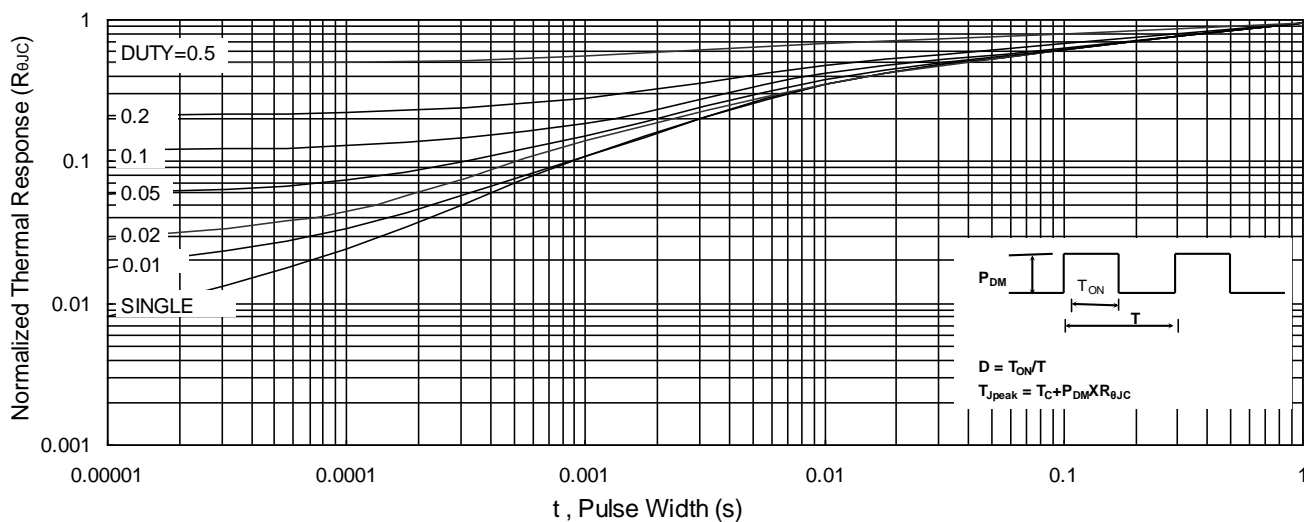


Fig.9 Normalized Maximum Transient Thermal Impedance

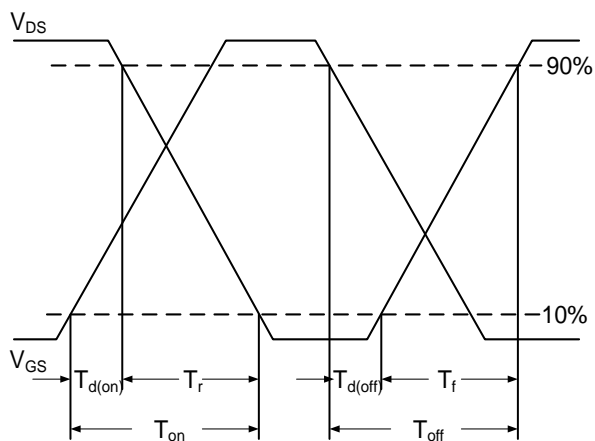


Fig.10 Switching Time Waveform

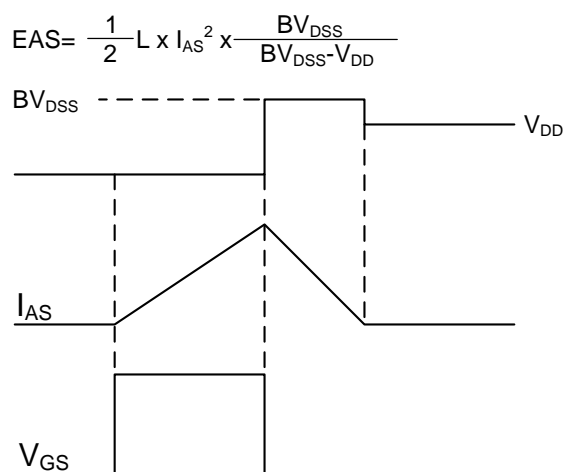
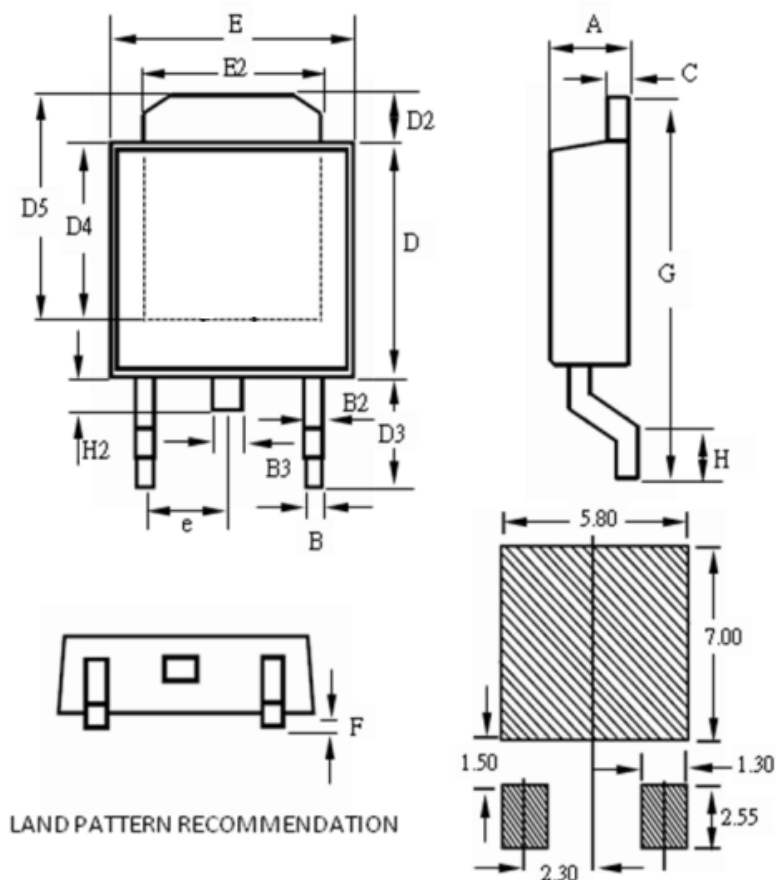


Fig.11 Unclamped Inductive Switching Waveform

TO-252 Package Outline



SYMBOLS	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	2.10	--	2.50	0.083	--	0.098
B	0.30	--	0.89	0.012	--	0.035
B2	0.40	--	1.14	0.016	--	0.045
B3	0.60	--	1.00	0.024	--	0.039
C	0.40	--	0.89	0.016	--	0.035
D	5.30	--	6.25	0.209	--	0.246
D2	0.50	--	1.70	0.020	--	0.067
D3	2.20	--	3.40	0.087	--	0.134
D4	4.32	--	--	0.170	--	--
D5	5.21	--	--	0.205	--	--
E	6.30	--	6.73	0.248	--	0.265
E2	4.80	--	5.46	0.189	--	0.215
F	0.00	--	0.30	0.000	--	0.012
G	9.20	--	10.41	0.362	--	0.410
H	0.90	--	1.95	0.035	--	0.077
H2	0.50	--	1.10	0.020	--	0.043
e	--	2.30	--	--	0.091	--

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