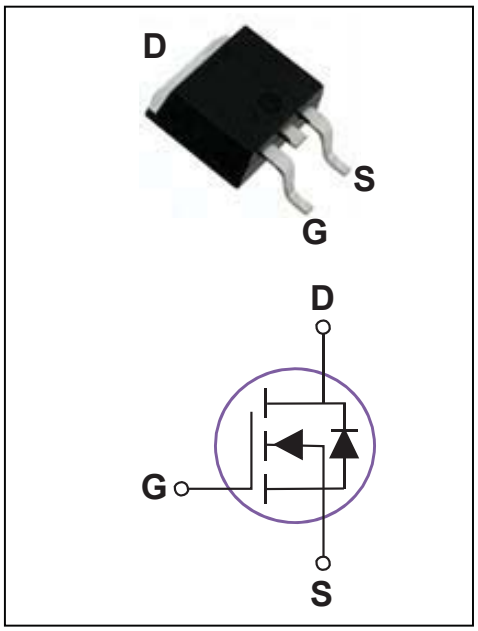
TO-252 Plastic-Encapsulate Transistors

BVDSS	RDSON	ID
100V	115mΩ	12A



Features

- *100V,12A , RDS(ON)=115mΩ@VGS=10V*
- *Improved dv/dt capability*
- *Fast switching*
- *100% EAS Guaranteed*
- *Green Device Available*

Applications

- *Networking*
- *Load Switch*
- *LED applications*

MAXIMUM RATING5 AND CHARACTERI5TIC5

@ 250C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current – Continuous (T_C=25℃)	I_D	12	A
Drain Current – Continuous (T_C=100℃)		7.6	A
Drain Current – Pulsed[1]	I_{DM}	48	A
Single Pulse Avalanche Energy[2]	EAS	6	mJ
Single Pulse Avalanche Current[2]	IAS	11	A
Power Dissipation (T_C=25℃)	P_D	34.7	W
Power Dissipation – Derate above 25℃		0.27	W/℃
Storage Temperature Range	T_{STG}	-50 to 150	℃
Operating Junction Temperature Range	T_J	-50 to 150	℃

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to ambient	$R_{\theta JA}$	---	62	℃/W
Thermal Resistance Junction to Case	$R_{\theta JC}$	---	3.1	℃/W

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Off Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V , I_D=250uA	100	---	---	V
BV_{DSS} Temperature Coefficient	$\triangle BV_{DSS}/\triangle T_J$	Reference to 25℃ , I_D=1mA	---	0.09	---	V/℃
Drain-Source Leakage Current	I_{DSS}	V_{DS}=100V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=80V , V_{GS}=0V , T_J=125℃	---	---	10	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA

On Characteristics

Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V , I_D=10A	---	95	115	mΩ
		V_{GS}=4.5V , I_D=8A	---	100	125	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D =250uA	1.2	1.6	2.2	V
$V_{GS(th)}$ Temperature Coefficient	$\triangle V_{GS(th)}$		---	-5	---	mV/℃
Forward Transconductance	gfs	V_{DS}=10V , I_D=2A	---	8.7	---	S

Dynamic and switching Characteristics

Total Gate Charge[3,4]	Q_g	V_{DS}=50V , V_{GS}=10V , I_D=2A	---	20	40	nC
Gate-Source Charge[3,4]	Q_{gs}		---	3.2	6	
Gate-Drain Charge[3,4]	Q_{gd}		---	3.6	7	
Turn-On Delay Time[3,4]	$T_{d(on)}$	V_{DD}=50V , V_{GS}=10V , R_G=3.3Ω I_D=1A	---	18	36	ns
Rise Time[3,4]	T_r		---	4	8	
Turn-Off Delay Time[3,4]	$T_{d(off)}$		---	40	80	
Fall Time[3,4]	T_f		---	3	6	
Input Capacitance	C_{iss}	V_{DS}=25V , V_{GS}=0V , F=1MHz	---	1400	2800	pF
Output Capacitance	C_{oss}		---	60	120	
Reverse Transfer Capacitance	C_{rss}		---	35	70	
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, F=1MHz	---	2	4	Ω

Drain-Source Diode Characteristics and Maximum Ratings

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current	I_S	V_G=V_D=0V , Force Current	---	---	12	A
Pulsed Source Current	I_{SM}		---	---	24	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1	V
Reverse Recovery Time[3]	t_{rr}	I_S=1A , dI/dt=100A/μs T_J=25℃	---	38	---	ns
Reverse Recovery Charge[3]	Q_{rr}		---	27	---	nC

Note :
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=11A.,R_G=25Ω,Starting T_J=25℃.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. Essentially independent of operating temperature.

RATINGS AND CHARACTERISTIC CURVES

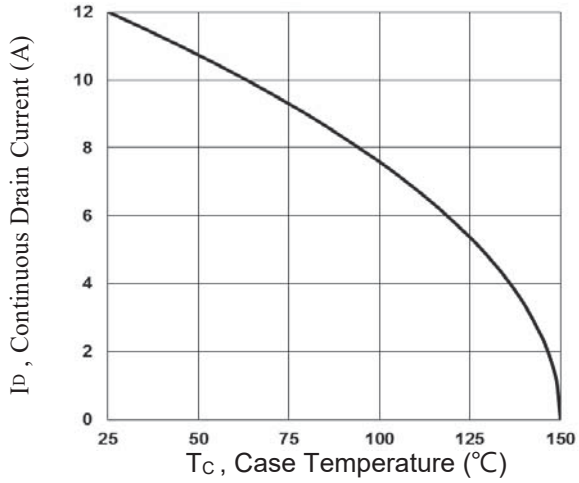


Fig.1 Continuous Drain Current vs. T_C

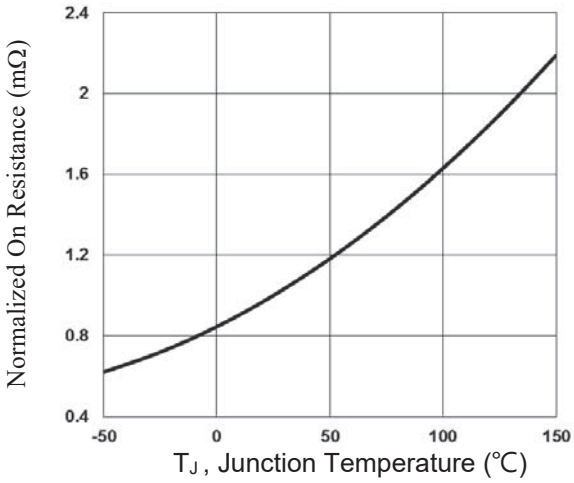


Fig.2 Normalized RDSON vs. T_J

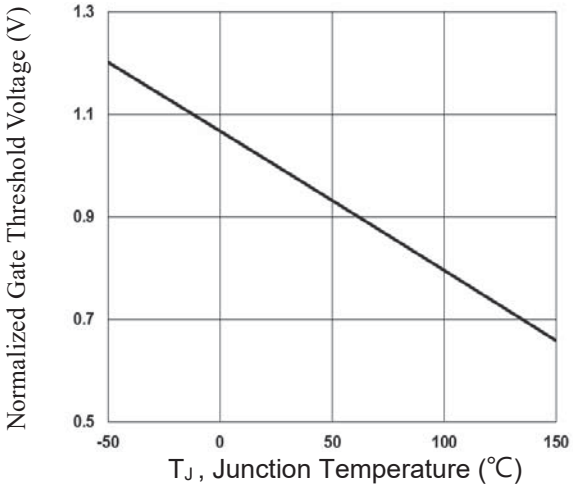


Fig.3 Normalized V_{th} vs. T_J

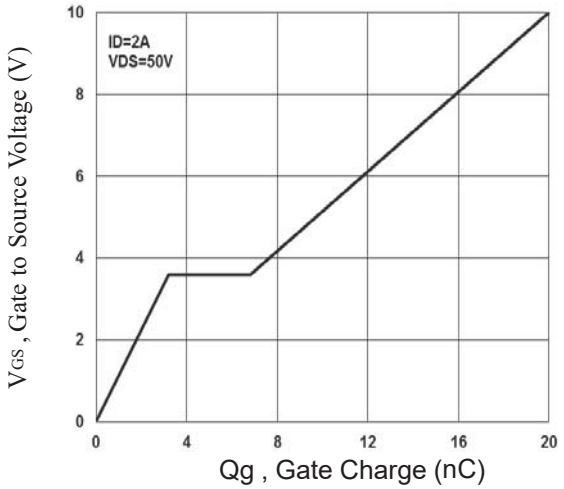


Fig.4 Gate Charge Waveform

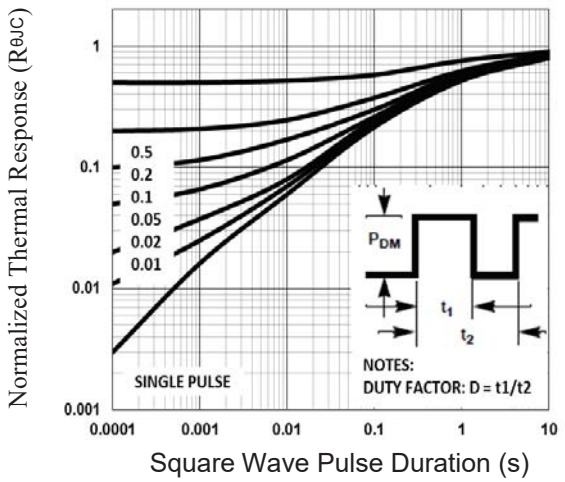


Fig.5 Normalized Transient Impedance

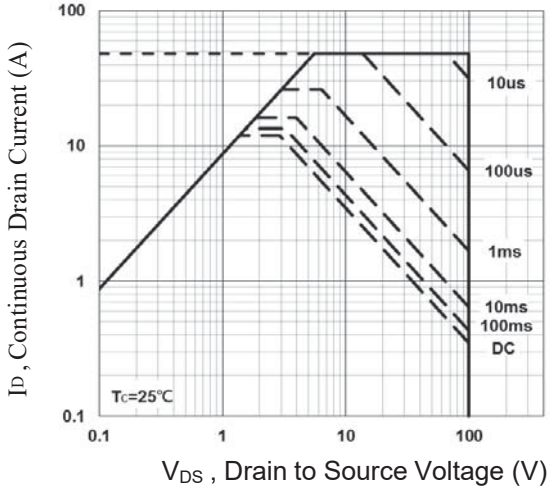


Fig.6 Maximum Safe Operation Area

RATINGS AND CHARACTERISTIC CURVES

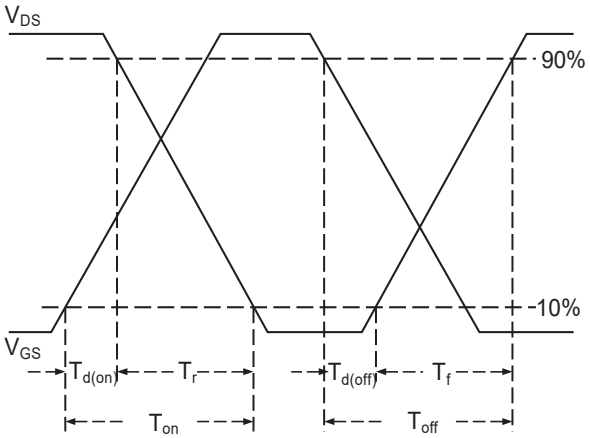


Fig.7 Switching Time Waveform

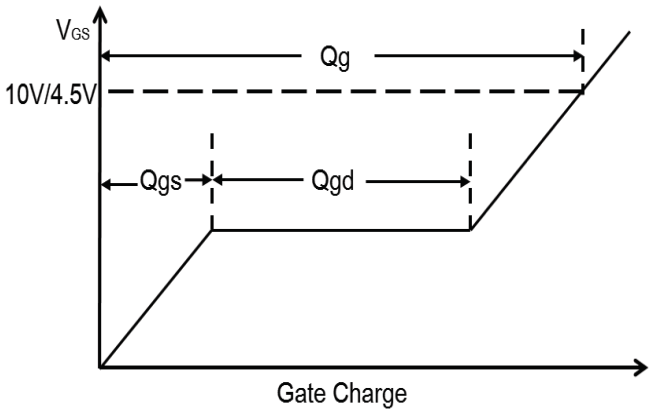
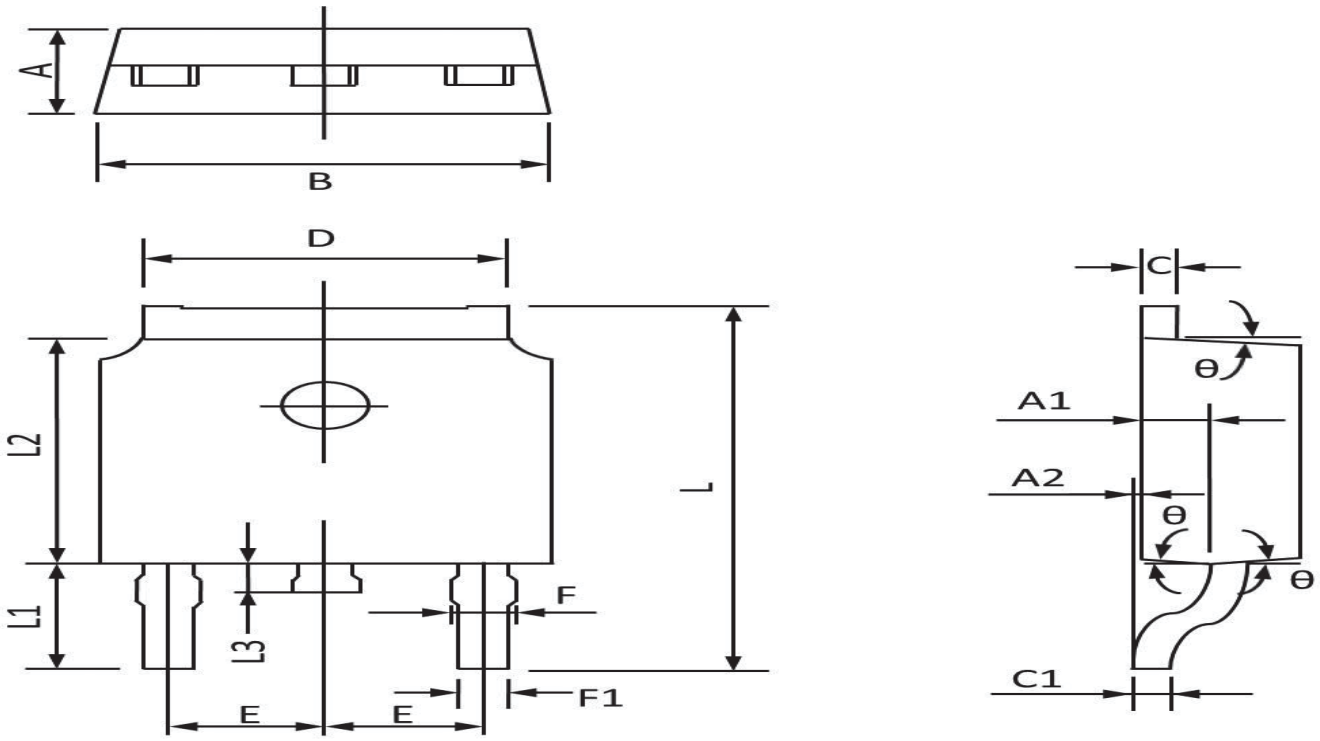


Fig.8 Gate Charge Waveform

TO-252 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	2.400	2.200	0.094	0.087
A1	1.110	0.910	0.044	0.036
A2	0.150	0.000	0.006	0.000
B	6.800	6.400	0.268	0.252
C	0.580	0.450	0.023	0.018
C1	0.580	0.460	0.023	0.018
D	5.500	5.100	0.217	0.201
E	2.386	2.186	0.094	0.086
F	1.140	0.600	0.045	0.024
F1	0.880	0.500	0.035	0.020
L	10.400	9.400	0.409	0.370
L1	3.000	2.400	0.118	0.094
L2	6.223	5.400	0.245	0.213
L3	1.200	0.600	0.047	0.024
θ	9°	3°	9°	3°