

TO-252 Pin Configuration

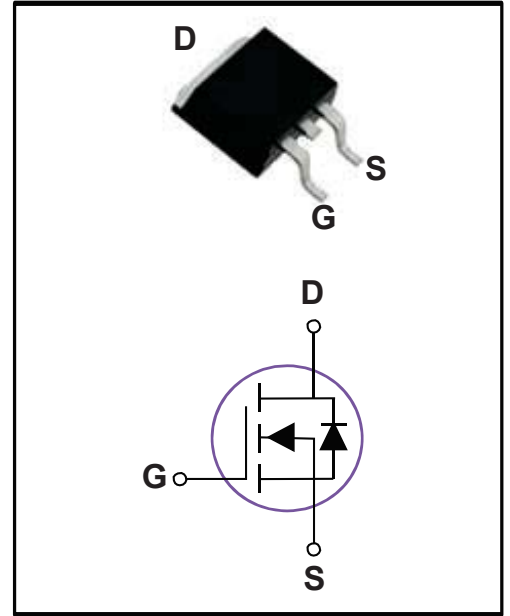
BVDSS	RDSON	ID
200V	0.240	9A

Features

- 200V, 9A, $R_{DS(ON)} = 0.24\Omega @ V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available

Applications

- Networking
- Load Switch
- LED applications



MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	200	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current – Continuous ($T_C=25^\circ C$)	I_D	9	A
Drain Current – Continuous ($T_C=100^\circ C$)		5.7	A
Drain Current – Pulsed ¹	I_{DM}	36	A
Single Pulse Avalanche Energy ²	E_{AS}	220	mJ
Single Pulse Avalanche Current ²	I_{AS}	21	A
Power Dissipation ($T_C=25^\circ C$)	P_D	44	W
Power Dissipation – Derate above 25°C		0.35	W/°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction to ambient	$R_{\theta JA}$	---	62	°C/W
Thermal Resistance Junction to Case	$R_{\theta JC}$	---	2.87	°C/W

MOSFETELECTRICALCHARACTERISTICS_{T_A= 25c unless otherwise specified}

Off Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V , I _D =250uA	200	---	---	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =200V , V _{GS} =0V , T _J =25℃	---	---	1	uA
		V _{DS} =160V , 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 =4A	---	0.2	0.24	Ω
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	1	2	3	V
Forward Transconductance	g _{fs}	V _{DS} =30V , I _D =3A	---	4	---	S

Dynamic and switching Characteristics

Total Gate Charge ^{3, 4}	Q _g	V _{DS} =100V , V _{GS} =10V , I _D =5A	---	12	18	nC
Gate-Source Charge ^{3, 4}	Q _{gs}		---	1	3	
Gate-Drain Charge ^{3, 4}	Q _{gd}		---	5	8	
Turn-On Delay Time ^{3, 4}	T _{d(on)}	V _{DD} =100V , V _{GS} =10V , R _G =60 I _D =5A	---	5	9	ns
Rise Time ^{3, 4}	T _r		---	17.4	33	
Turn-Off Delay Time ^{3, 4}	T _{d(off)}		---	40.7	80	
Fall Time ^{3, 4}	T _f		---	11.4	23	
Input Capacitance	C _{iss}	V _{DS} =100V , V _{GS} =0V , F=1MHz	---	540	810	pF
Output Capacitance	C _{oss}		---	48	72	
Reverse Transfer Capacitance	C _{rss}		---	11	17	
Gate resistance	R _g	V _{GS} =0V , V _{DS} =0V , F=1MHz	---	2.6	---	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	---	---	9	A
Pulsed Source Current	I _{SM}		---	---	18	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V , I _S =1A , T _J =25℃	---	---	1	V
Reverse Recovery Time	t _{rr}	V _R =200V, I _S =5A	---	130	---	ns
Reverse Recovery Charge	Q _{rr}	di/dt=100A/μs , T _J =25℃	---	520	---	nC

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=50V, V_{GS}=10V, L=1mH, I_{AS}=21A., 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.

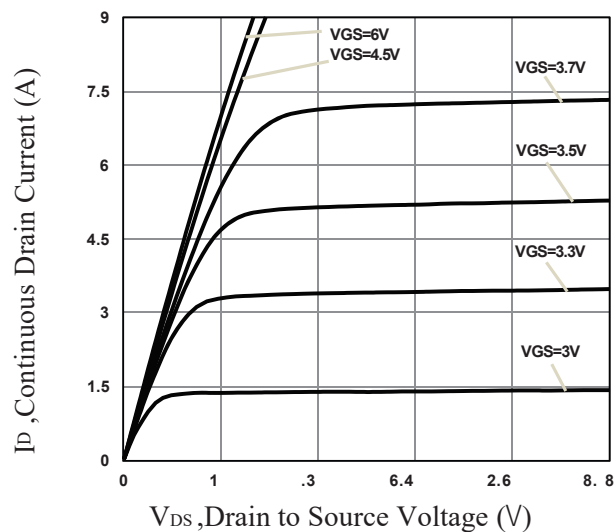


Fig.1 Typical Output Characteristics

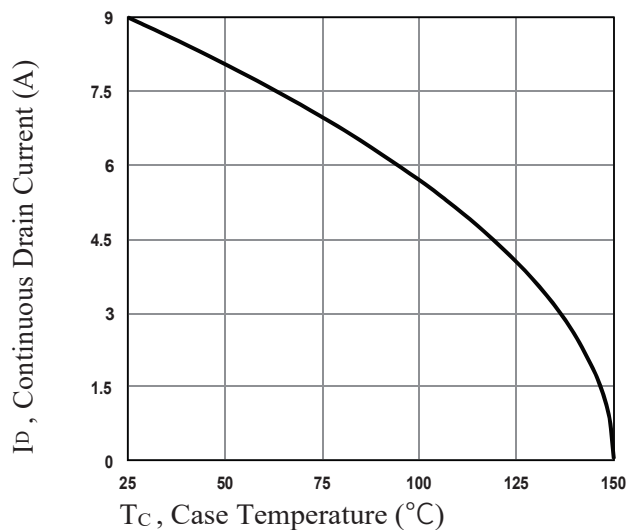


Fig.2 Continuous Drain Current vs. T_c

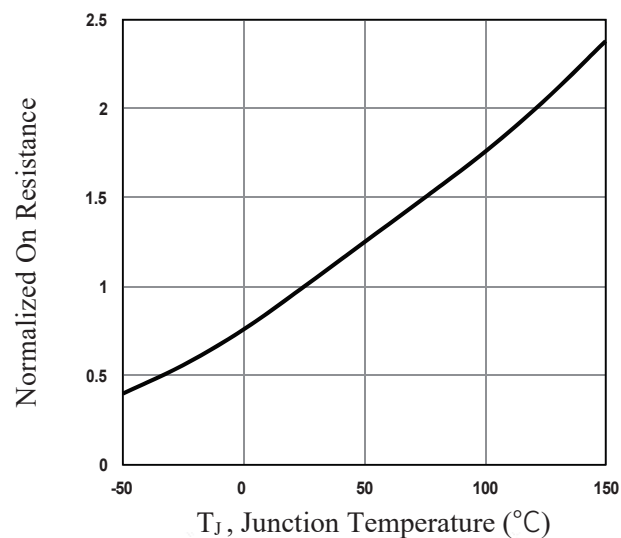


Fig.3 Normalized $R_{DS(on)}$ vs. T_j

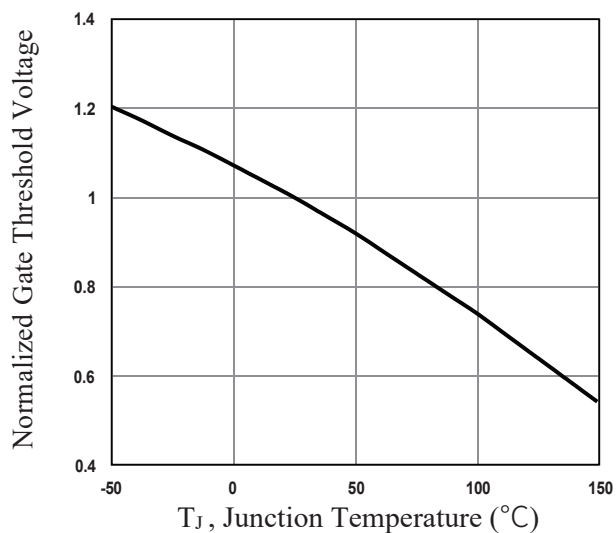


Fig.4 Normalized V_{th} vs. T_j

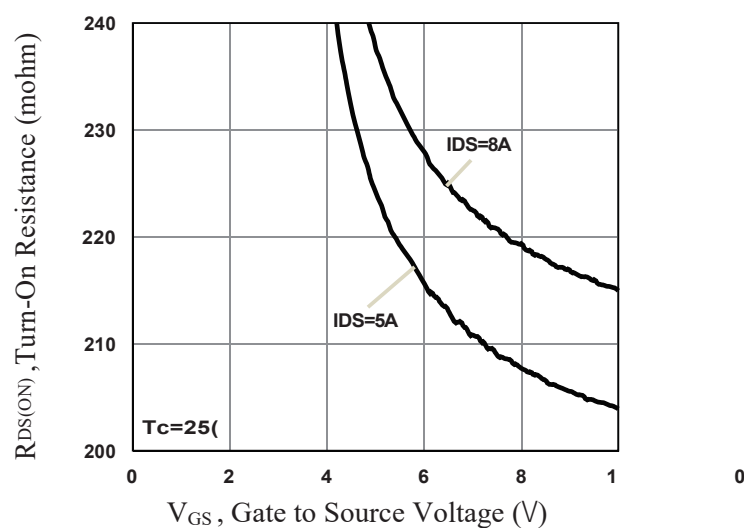


Fig.5 Turn-On Resistance vs. V_{GS}

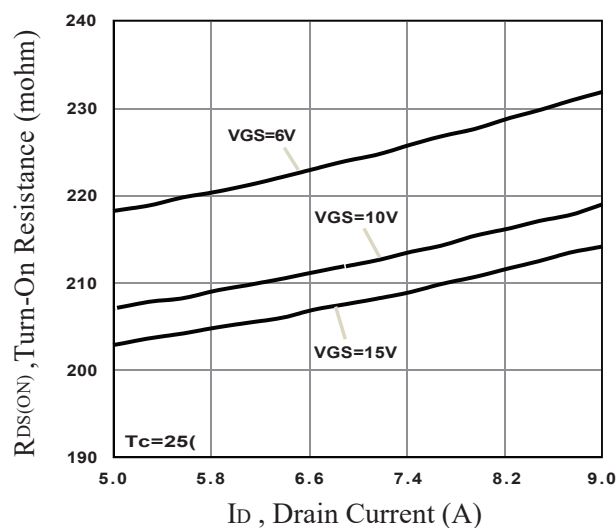


Fig.6 Turn-On Resistance vs. I_D

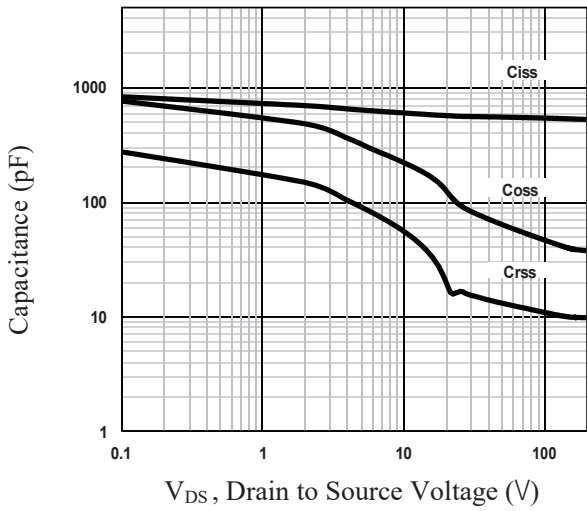


Fig.7 Capacitance Characteristics

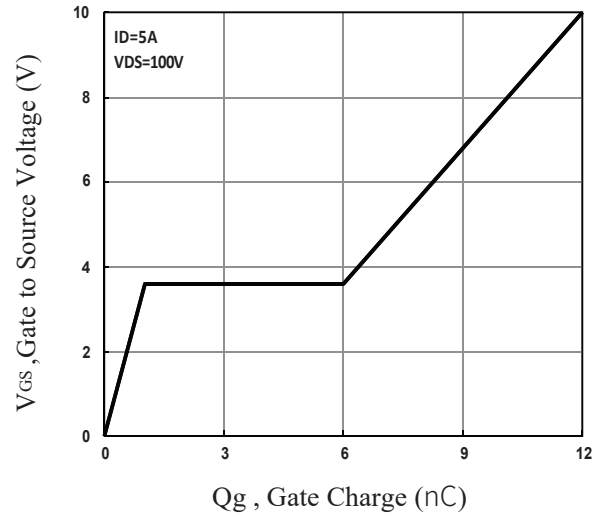


Fig.8 Gate Charge Characteristics

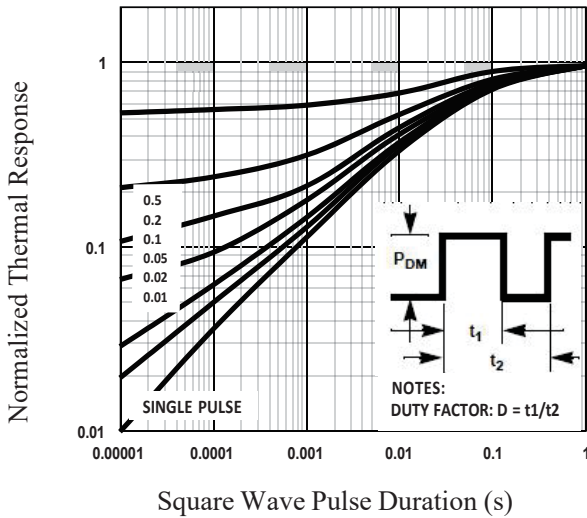


Fig.9 Normalized Transient Impedance

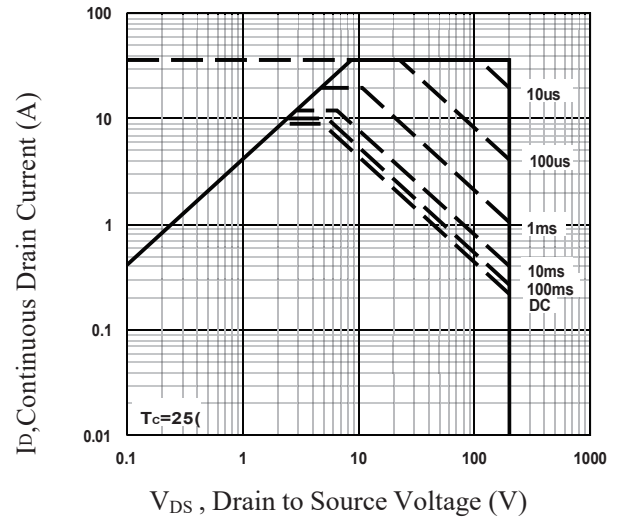


Fig.10 Maximum Safe Operation Area

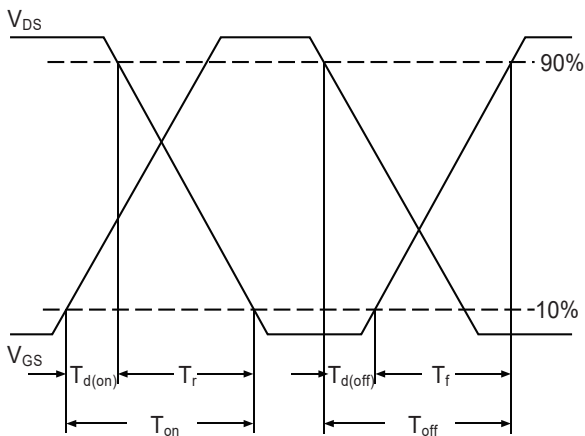


Fig.11 Switching Time Waveform

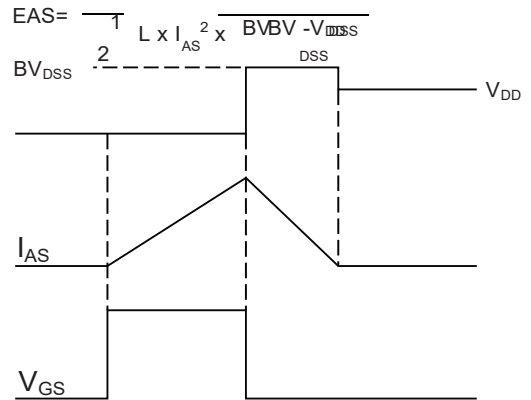
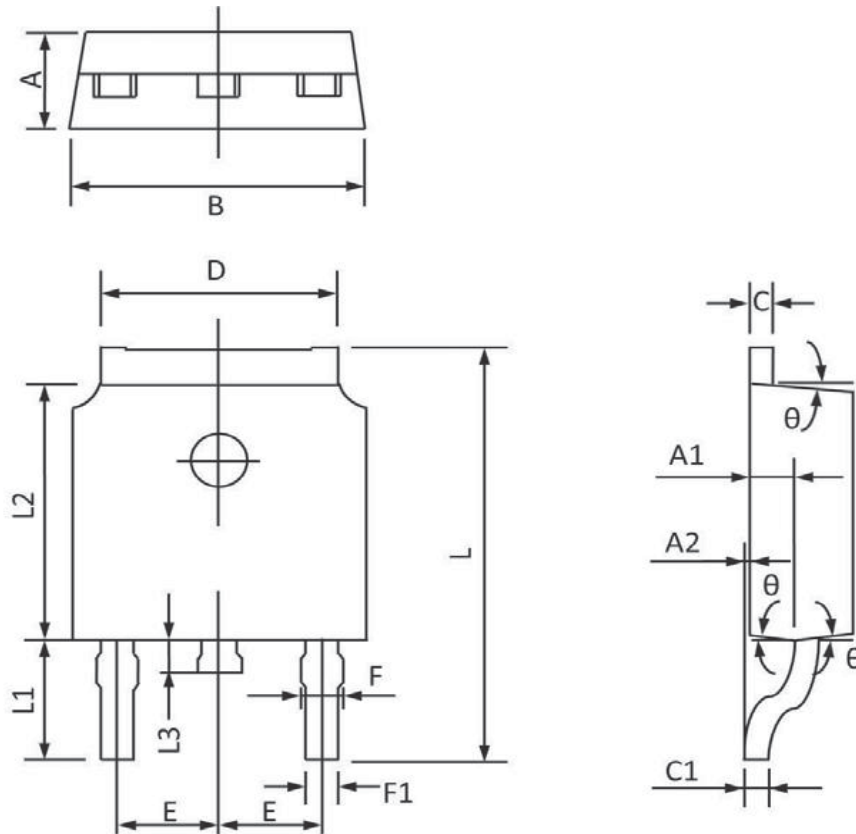


Fig.12 EAS Waveform

TO-252 PACKAGE INFORMATION


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	2.450	2.150	0.096	0.085
A1	1.200	0.910	0.047	0.036
A2	0.150	0.000	0.006	0.000
B	6.800	6.300	0.268	0.248
C	0.580	0.350	0.023	0.014
C1	0.550	0.380	0.022	0.015
D	5.500	5.100	0.217	0.201
E	2.390	2.000	0.094	0.079
F	0.940	0.600	0.037	0.024
F1	0.860	0.500	0.034	0.020
L	10.400	9.400	0.409	0.370
L1	3.000	2.400	0.118	0.094
L2	6.200	5.300	0.244	0.209
L3	1.200	0.600	0.047	0.024
θ	9°	3°	9°	3°