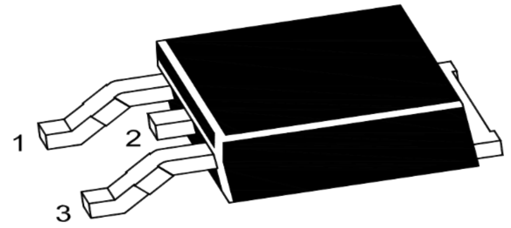
Descriptions

- Fast Switching
- Low $R_{DS(ON)}$ and Gate Charge
- Low Reverse Transfer Capacitance
- 100% Single Pluse Avanlanche Energy Test

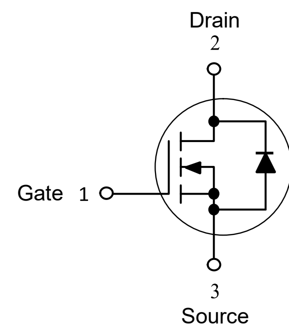
TO-252



Features

- V_{DS} = 1000V, I_D = 2A
- $R_{DS(ON)}$ < 8.8 Ω (@V_{GS}=10V)
- ESD Protected > 4kV (HBM)
- MSL: 1 Level

Schematic Diagram



Applications

- Power Switch
- Adaptor, Charger

Absolute Maximum Ratings

Ratings at T_C =25℃ unless otherwise specified.

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DSS}	1000	V
Gate-Source Voltage		V_{GSS}	±30	V
Continuous Drain Current	T_C=25°C	I_D	2	A
	T_C=100°C		1.2	
Pulsed Drain Current [1]		I_{DM}	8	
Avalanche Current [2]		I_{AR}	3.3	A
Single Pulse Avalanche Energy [2]		E_{AS}	80	mJ
Avalanche Energy ,Repetitive [1]		E_{AR}	15	mJ
Power Dissipation		P_D	95	W
Junction and Storage Temperature Range		T_J, T_{STG}	150, -55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Typ.	Units
Maximum Junction-to-Ambient	$R_{θJA}$	100	°C/W
Maximum Junction-to-Case	$R_{θJC}$	3.13	°C/W

Electrical Characteristics (Tc = 25℃)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Static Parameters						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=250μA, V_{GS}=0V	1000	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=1000V, V_{GS}=0V T_A=25℃	--	--	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±30V	--	--	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2	3	4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=1.0A	--	7.8	8.8	Ω
Dynamic Parameters						
Forward Transconductance	g_{FS}	V_{DS}=15V, I_D=2.0A	--	2.1	--	S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz	--	380	--	pF
Output Capacitance	C_{oss}		--	40	--	pF
Reverse Transfer Capacitance	C_{rss}		--	4	--	pF
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V, V_{DD}=500V, I_D=2A	--	15	--	nC
Gate Source Charge	Q_{gs}		--	2.1	--	nC
Gate Drain Charge	Q_{gd}		--	6	--	nC
Turn-On DelayTime	$t_{D(on)}$	V_{GS}=10V, V_{DD}=500V, I_D=2A R_g=12Ω	--	8	--	ns
Turn-On Rise Time	t_r		--	6	--	ns
Turn-Off DelayTime	$t_{D(off)}$		--	36	--	ns
Turn-Off Fall Time	t_f		--	15	--	ns
Body Diode Reverse Recovery Time	trr	I_F=2A, V_{GS}=0,T_J=25℃ di/dt=100A/μs	--	500	--	ns
Body Diode Reverse Recovery Charge	Q_{rr}		--	1.2	--	uC
Body Diode Forward Voltage	V_{SD}	I_F=2A, V_{GS}=0V	--	1.5	--	V
Body Diode Continuous Current	I_{SD}		--	--	2	A
Body Diode Maximum Pulse Current	I_{SM}		--	--	8	A

Notes: 1. Repetitive rating; Pulse width limited by maximum junction temperature;
2. L=10.0mH, I_D=2.0A, start T_J=25℃

Electrical Characteristics Curves

Fig. 1. Output Characteristics @ 25°C

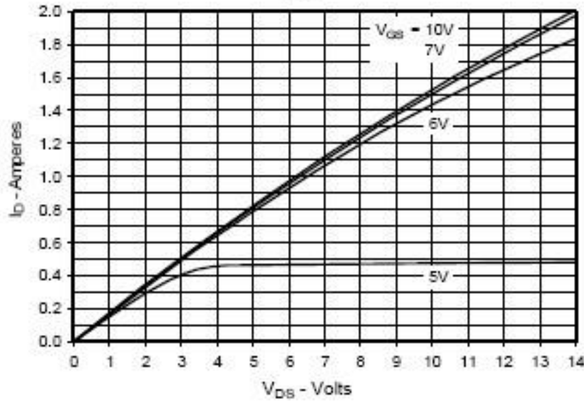


Fig. 2. Extended Output Characteristics @ 25°C

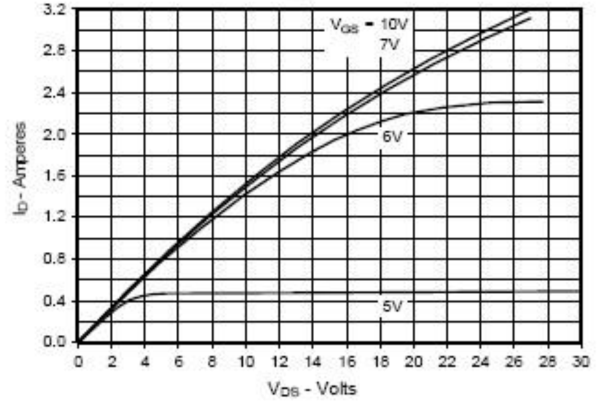


Fig. 3. Output Characteristics @ 125°C

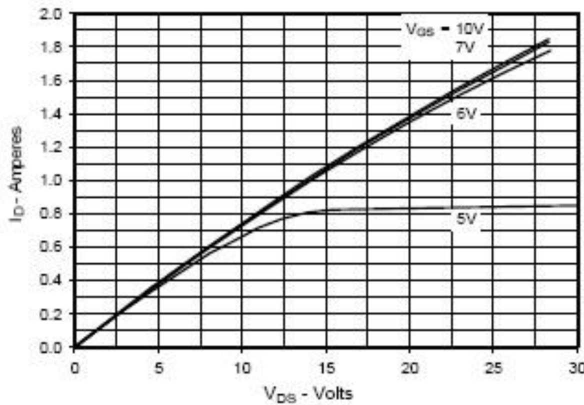


Fig. 4. $R_{DS(on)}$ Normalized to I_D = 1A Value vs. Junction Temperature

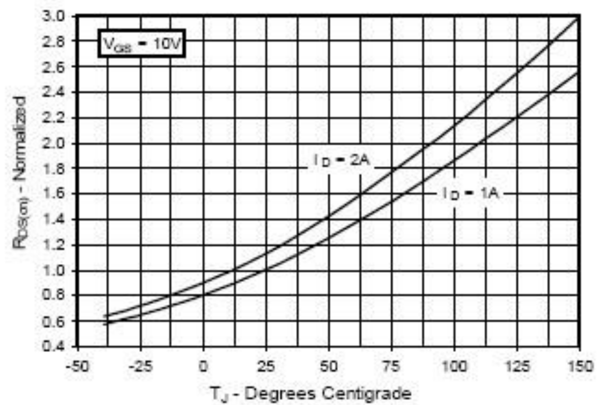


Fig. 5. $R_{DS(on)}$ Normalized to I_D = 1A Value vs. Drain Current

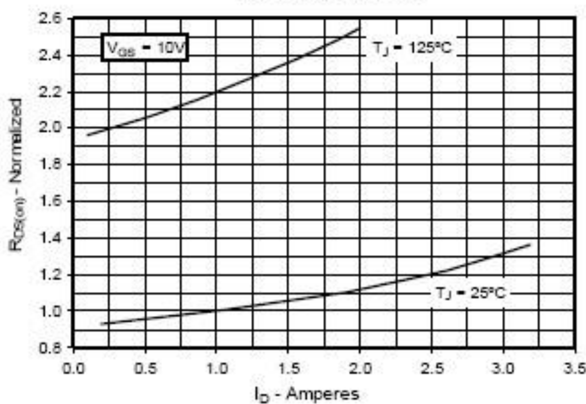


Fig. 6. Maximum Drain Current vs. Case Temperature

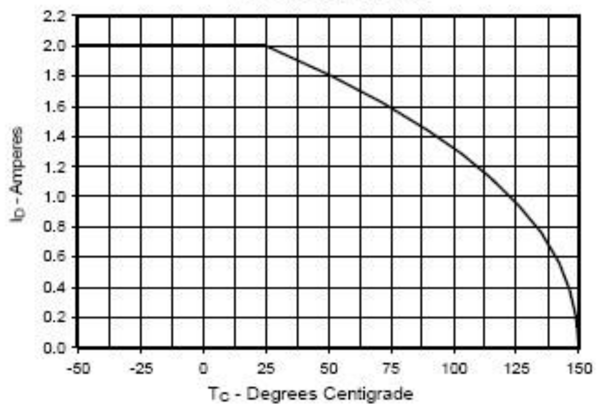


Fig. 7. Input Admittance

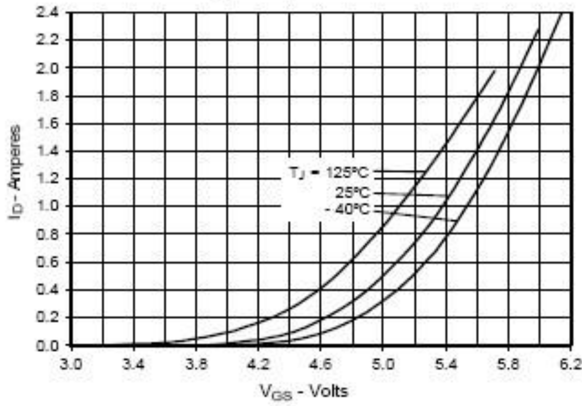


Fig. 8. Transconductance

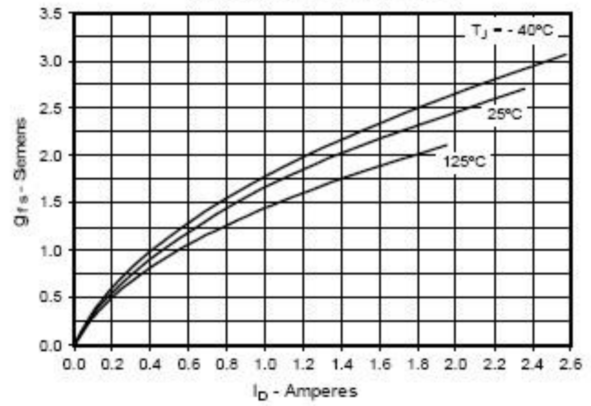


Fig. 9. Forward Voltage Drop of Intrinsic Diode

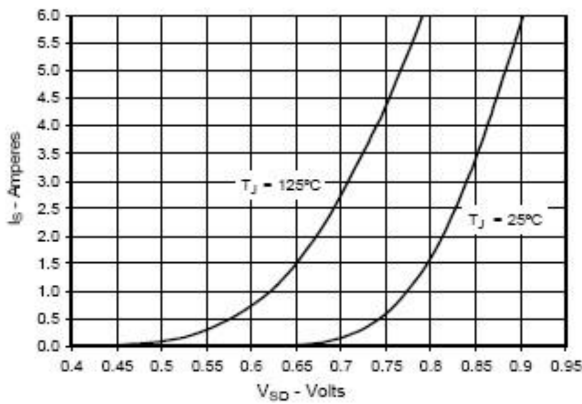


Fig. 10. Gate Charge

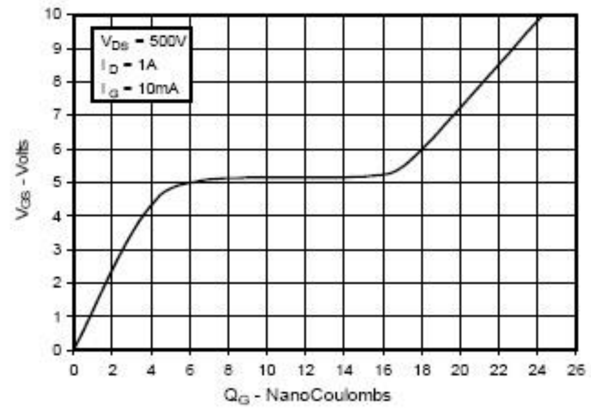


Fig. 11. Capacitance

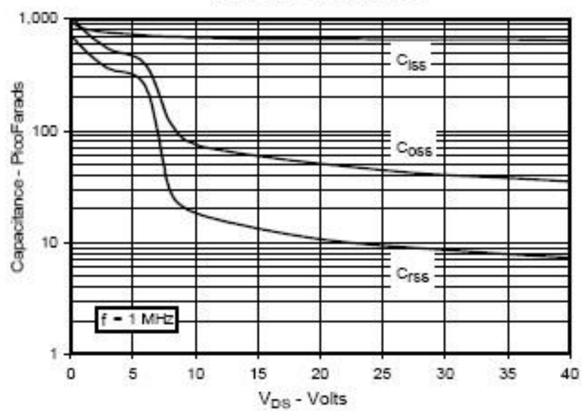
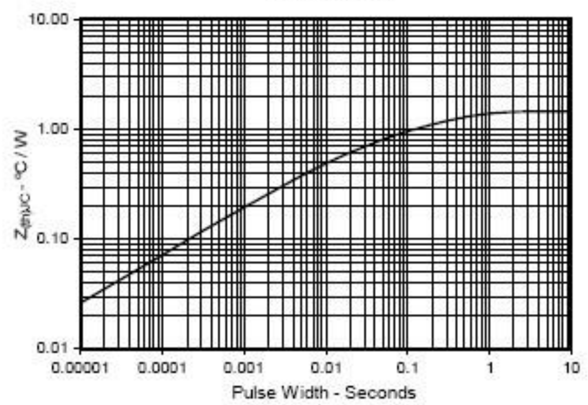
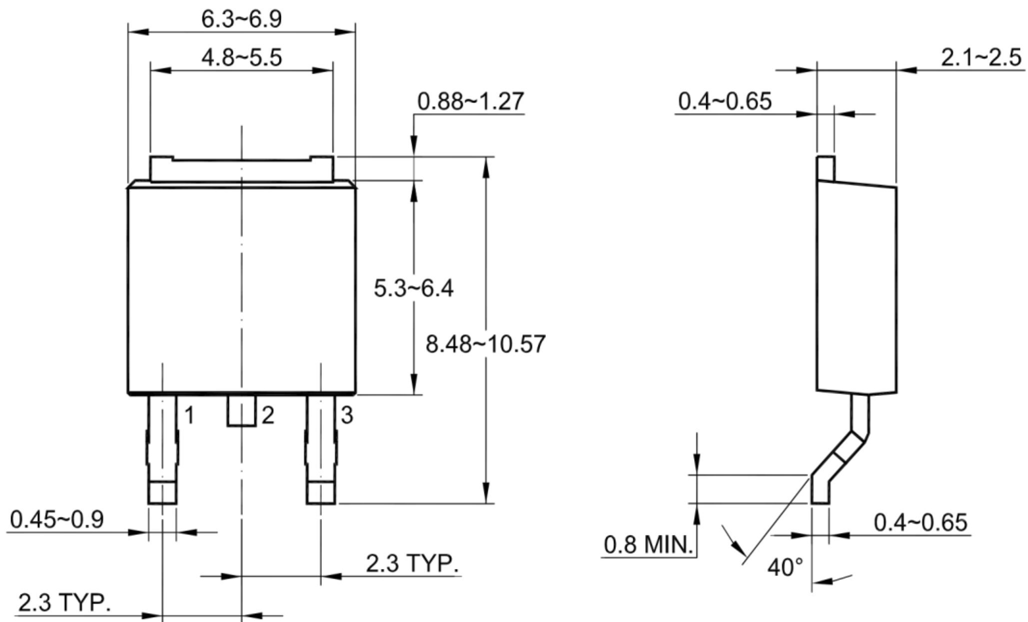


Fig. 12. Maximum Transient Thermal Impedance



Package Outline (TO-252) **Unit: mm**



Recommended Soldering Footprint **Unit: mm**