

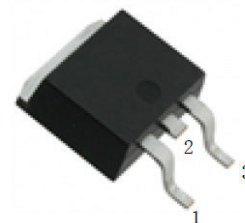
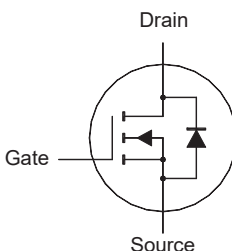
N-Channel Enhancement Mode MOSFET

Features

- Low threshold drive
- Halogen and Antimony Free(HAF), RoHS compliant

Applications

- Switching applications
- DC-DC converters for Telecom and Computer



1.Gate 2.Drain 3.Source
TO-252 Plastic Package

Key Parameters

Parameter	Value	Unit
BV _{DSS}	60	V
R _{DS(ON)} Max	75 @ V _{GS} = 10 V	mΩ
	95 @ V _{GS} = 4.5 V	
V _{GS(th)} typ	1.6	V
Q _g typ	8.6 @ V _{GS} = 10 V	nC

Absolute Maximum Ratings (at T_a = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	60	V
Gate-Source Voltage	V _{GS}	± 20	V
Drain Current	I _D	12	A
		7.5	
		T _c = 25°C	
		T _c = 100°C	
Peak Drain Current, Pulsed ¹⁾	I _{DM}	20	A
Single-Pulse Avalanche Current	I _{AS}	4.2	A
Single-Pulse Avalanche Energy ²⁾	E _{AS}	0.9	mJ
Power Dissipation	P _D	22.5	W
		T _c = 25°C	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	- 55 to + 150	°C

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Case	R _{θJC}	5.5	°C/W
Thermal Resistance from Junction to Ambient ³⁾	R _{θJA}	40	°C/W

¹⁾ Pulse Test: Pulse Width ≤ 100 μs, Duty Cycle ≤ 2%, Repetitive rating, pulse width limited by junction temperature T_{J(MAX)} = 150°C.

²⁾ Limited by T_{J(MAX)}, starting T_J = 25 °C, L = 0.1 mH, R_g = 25 Ω, I_{AS} = 4.2 A, V_{GS} = 10 V.

³⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air.

Characteristics at $T_a = 25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain-Source Breakdown Voltage at $I_D = 250\ \mu\text{A}$	BV_{DSS}	60	-	-	V
Drain-Source Leakage Current at $V_{DS} = 48\ \text{V}$	I_{DSS}	-	-	1	μA
Gate Leakage Current at $V_{GS} = \pm 20\ \text{V}$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage at $V_{DS} = V_{GS}$, $I_D = 250\ \mu\text{A}$	$V_{GS(th)}$	1.2	-	2.5	V
Drain-Source On-State Resistance at $V_{GS} = 10\ \text{V}$, $I_D = 2\ \text{A}$ at $V_{GS} = 4.5\ \text{V}$, $I_D = 1.5\ \text{A}$	$R_{DS(on)}$	- -	62 -	75 95	m Ω
DYNAMIC PARAMETERS					
Forward Transconductance at $V_{DS} = 5\ \text{V}$, $I_D = 2\ \text{A}$	g_{fs}	-	5	-	S
Gate Resistance at $V_{DS} = 0\ \text{V}$, $V_{GS} = 0\ \text{V}$, $f = 1\ \text{MHz}$	R_g	-	1.3	-	Ω
Input Capacitance at $V_{DS} = 30\ \text{V}$, $V_{GS} = 0\ \text{V}$, $f = 1\ \text{MHz}$	C_{iss}	-	445	-	pF
Output Capacitance at $V_{DS} = 30\ \text{V}$, $V_{GS} = 0\ \text{V}$, $f = 1\ \text{MHz}$	C_{oss}	-	22	-	pF
Reverse Transfer Capacitance at $V_{DS} = 30\ \text{V}$, $V_{GS} = 0\ \text{V}$, $f = 1\ \text{MHz}$	C_{rss}	-	18	-	pF
Gate Charge Total at $V_{DS} = 30\ \text{V}$, $V_{GS} = 10\ \text{V}$, $I_D = 2\ \text{A}$ at $V_{DS} = 30\ \text{V}$, $V_{GS} = 4.5\ \text{V}$, $I_D = 2\ \text{A}$	Q_g	- -	8.6 4	- -	nC
Gate to Source Charge at $V_{DS} = 30\ \text{V}$, $V_{GS} = 10\ \text{V}$, $I_D = 2\ \text{A}$	Q_{gs}	-	1.8	-	nC
Gate to Drain Charge at $V_{DS} = 30\ \text{V}$, $V_{GS} = 10\ \text{V}$, $I_D = 2\ \text{A}$	Q_{gd}	-	1.2	-	nC
Turn-On Delay Time at $V_{DS} = 30\ \text{V}$, $V_{GS} = 10\ \text{V}$, $I_D = 2\ \text{A}$, $R_g = 4.7\ \Omega$	$t_{d(on)}$	-	7	-	ns
Turn-On Rise Time at $V_{DS} = 30\ \text{V}$, $V_{GS} = 10\ \text{V}$, $I_D = 2\ \text{A}$, $R_g = 4.7\ \Omega$	t_r	-	2	-	ns
Turn-Off Delay Time at $V_{DS} = 30\ \text{V}$, $V_{GS} = 10\ \text{V}$, $I_D = 2\ \text{A}$, $R_g = 4.7\ \Omega$	$t_{d(off)}$	-	6	-	ns
Turn-Off Fall Time at $V_{DS} = 30\ \text{V}$, $V_{GS} = 10\ \text{V}$, $I_D = 2\ \text{A}$, $R_g = 4.7\ \Omega$	t_f	-	6	-	ns
Body-Diode PARAMETERS					
Drain-Source Diode Forward Voltage at $I_S = 1\ \text{A}$, $V_{GS} = 0\ \text{V}$	V_{SD}	-	-	1.2	V
Body-Diode Continuous Current	I_S	-	-	12	A
Body-Diode Continuous Current, Pulsed	I_{SM}	-	-	20	A
Body Diode Reverse Recovery Time at $I_S = 2\ \text{A}$, $di/dt = 100\ \text{A} / \mu\text{s}$	t_{rr}	-	8.3	-	ns
Body Diode Reverse Recovery Charge at $I_S = 2\ \text{A}$, $di/dt = 100\ \text{A} / \mu\text{s}$	Q_{rr}	-	4.3	-	nC

Electrical Characteristics Curves

Fig. 1 Typical Output Characteristics

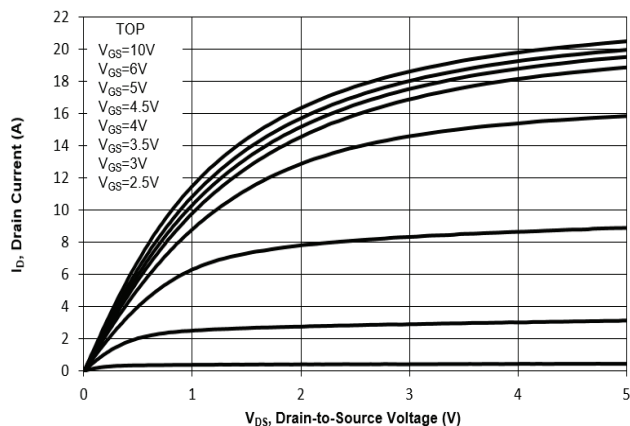


Fig. 2 Typical Transfer Characteristics

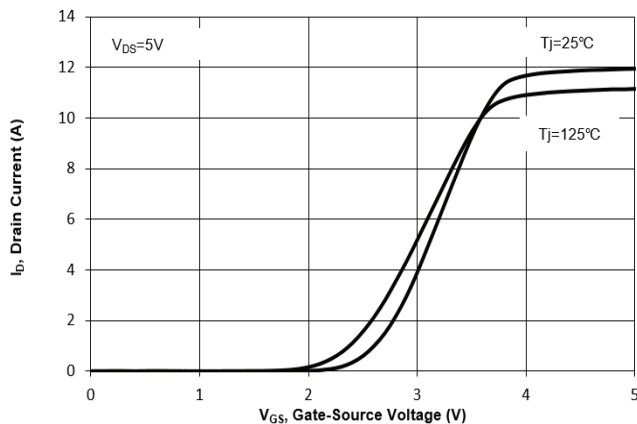


Fig. 3 On-Resistance vs. Drain Current

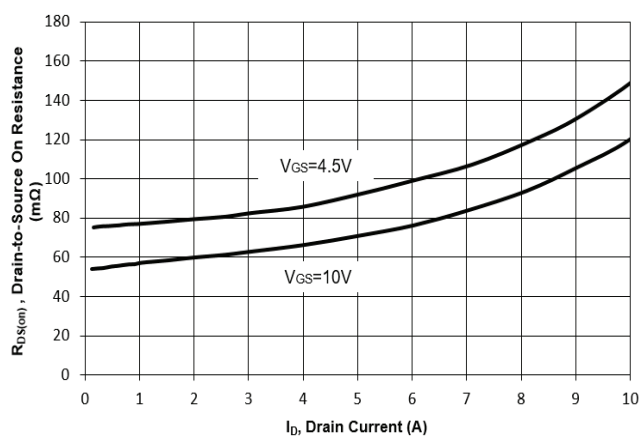


Fig. 4 On-Resistance vs. Gate to Source Voltage

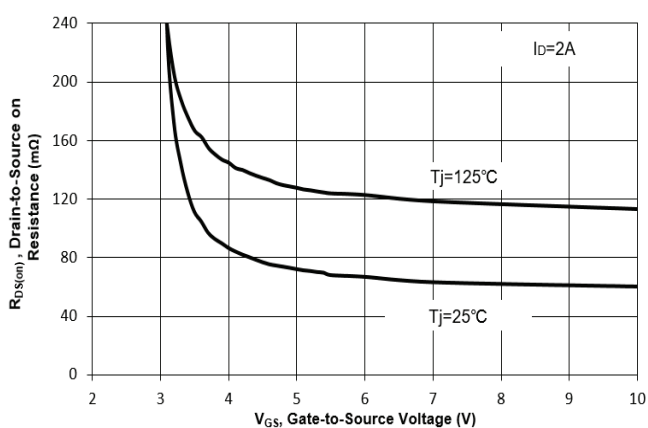


Fig. 5 On-Resistance vs. T_J

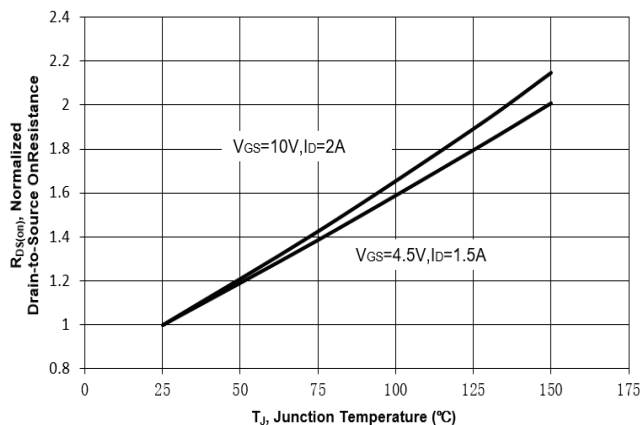
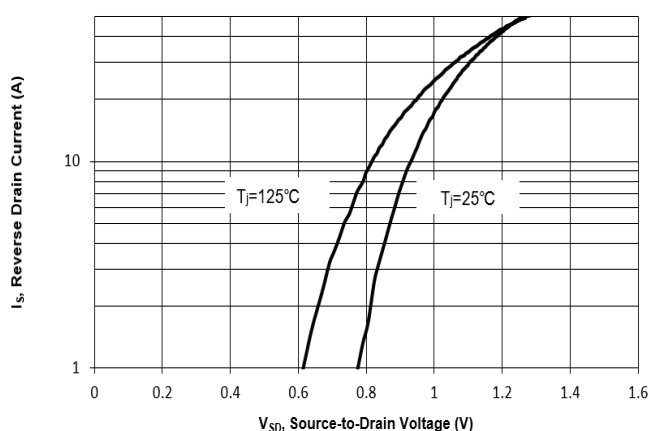


Fig. 6 Typical Body-Diode Forward Characteristics



Electrical Characteristics Curves

Fig. 7 Typical Junction Capacitance

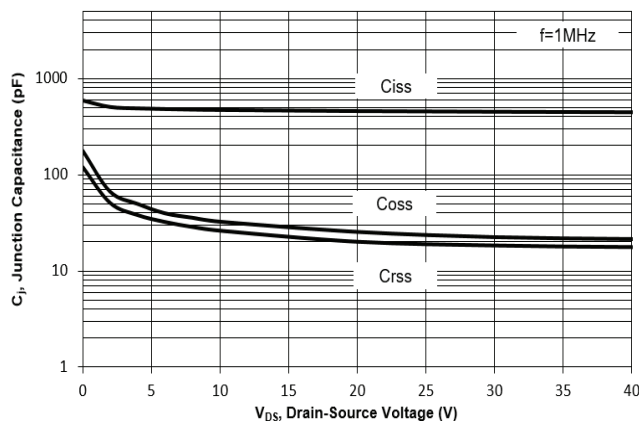


Fig. 8 Drain-Source Leakage Current vs. T_J

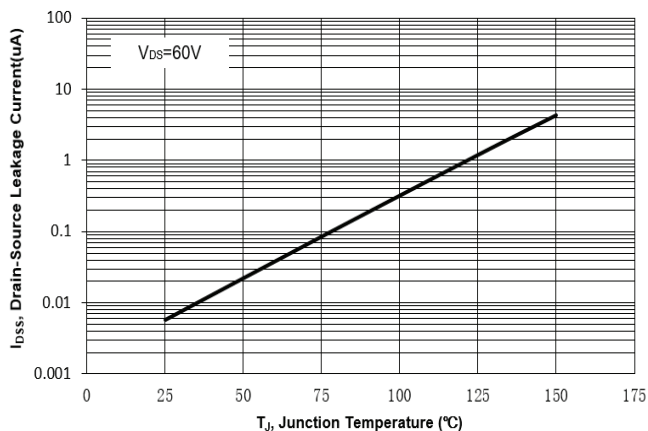


Fig. 9 V_{(BR)DSS} vs. Junction Temperature

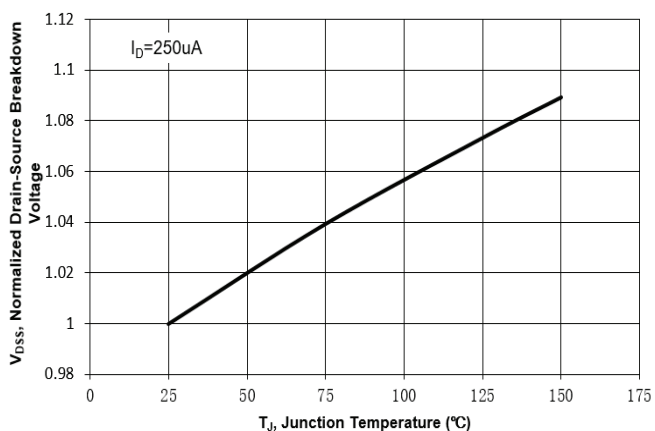


Fig. 10 Gate Threshold Variation vs. T_J

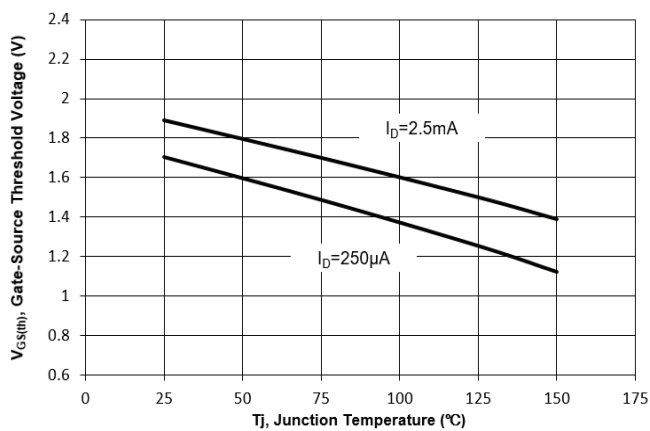


Fig. 11 Gate Charge

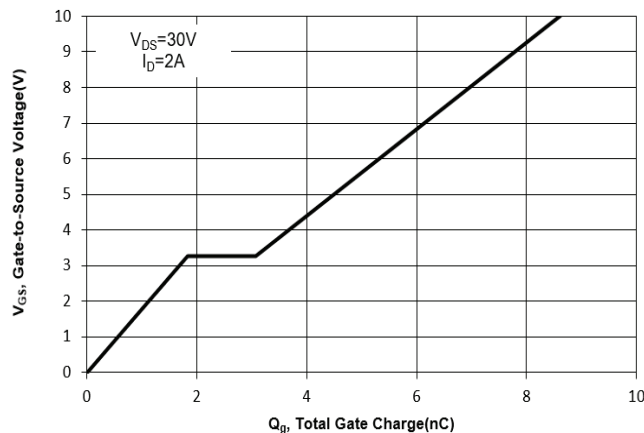
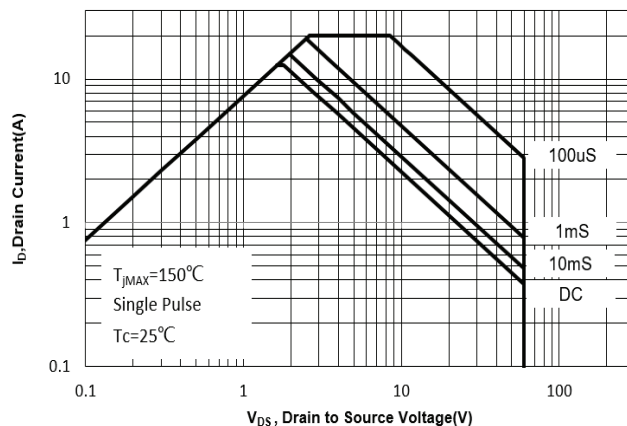
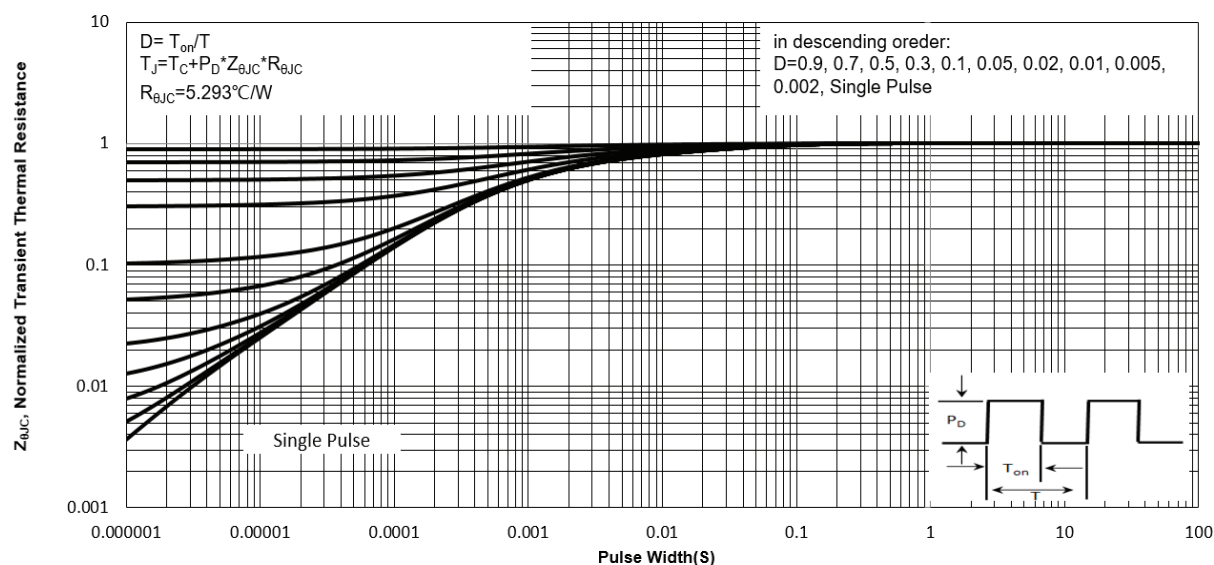
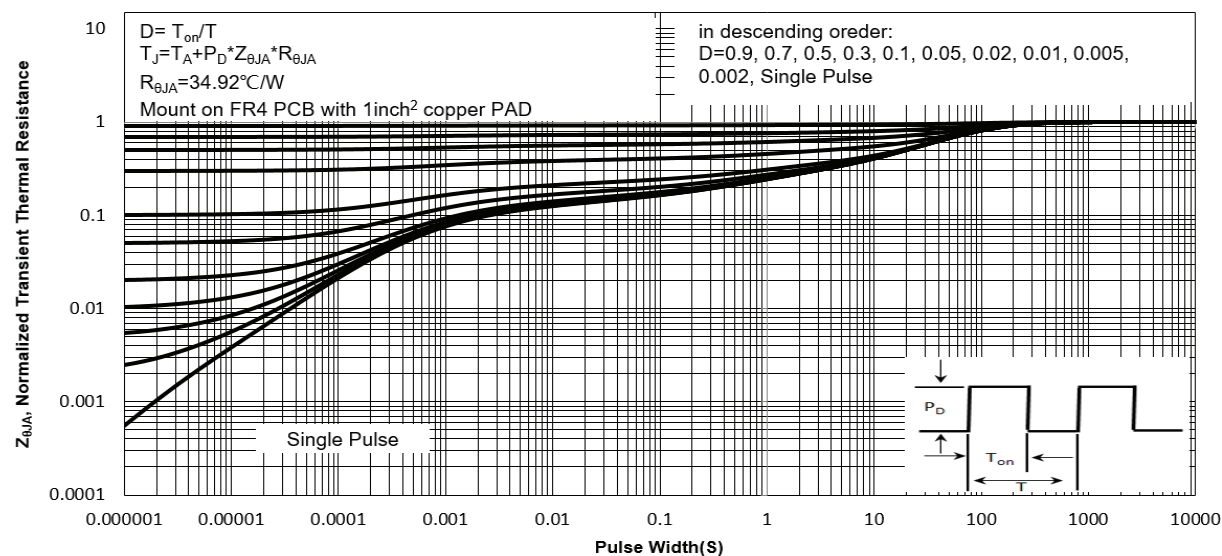


Fig. 12 Safe Operation Area



Electrical Characteristics Curves
Fig. 13 Normalized Maximum Transient Thermal Impedance($Z_{\theta JC}$)

Fig. 14 Normalized Maximum Transient Thermal Impedance($Z_{\theta JA}$)


Test Circuits

Fig.1-1 Switching times test circuit

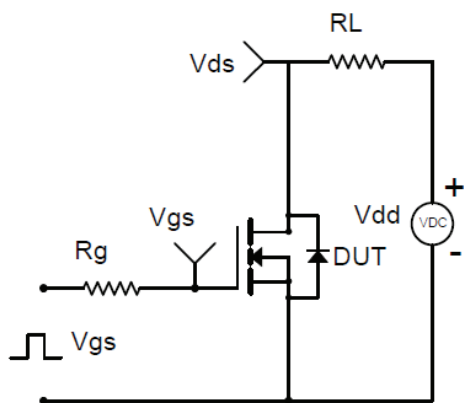


Fig.1-2 Switching Waveform

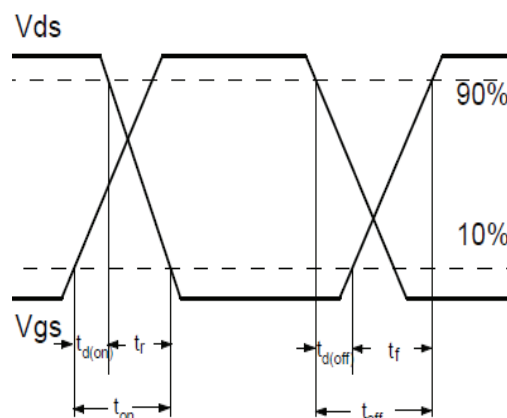


Fig.2-1 Gate charge test circuit

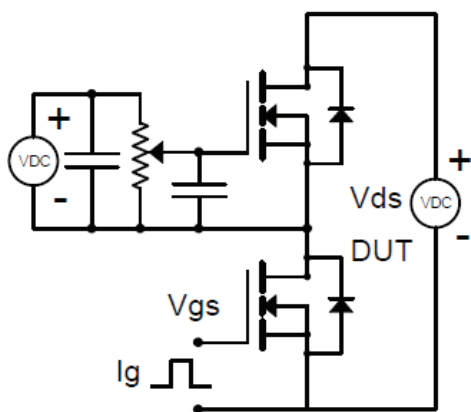


Fig.2-2 Gate charge waveform

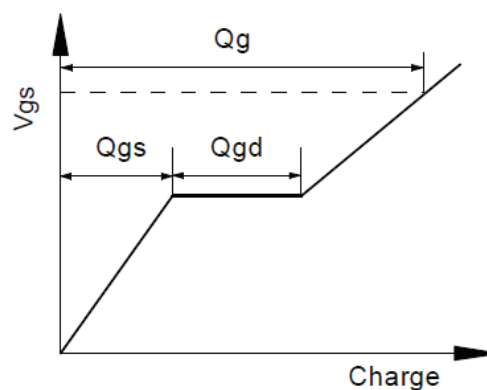


Fig.3-1 Avalanche test circuit

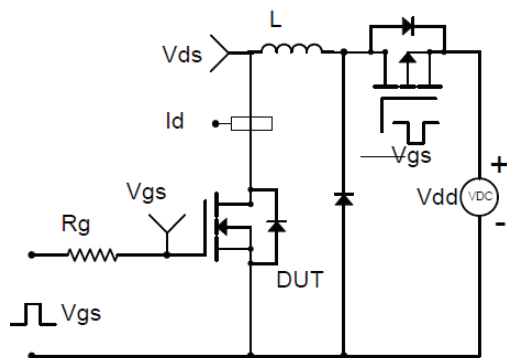
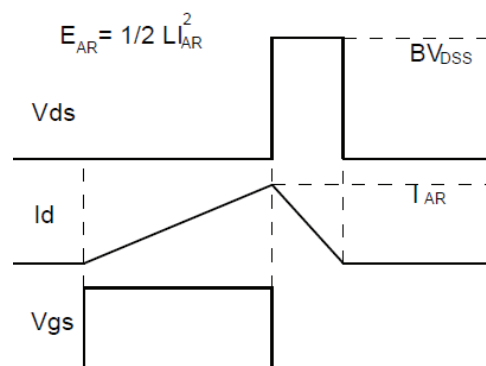
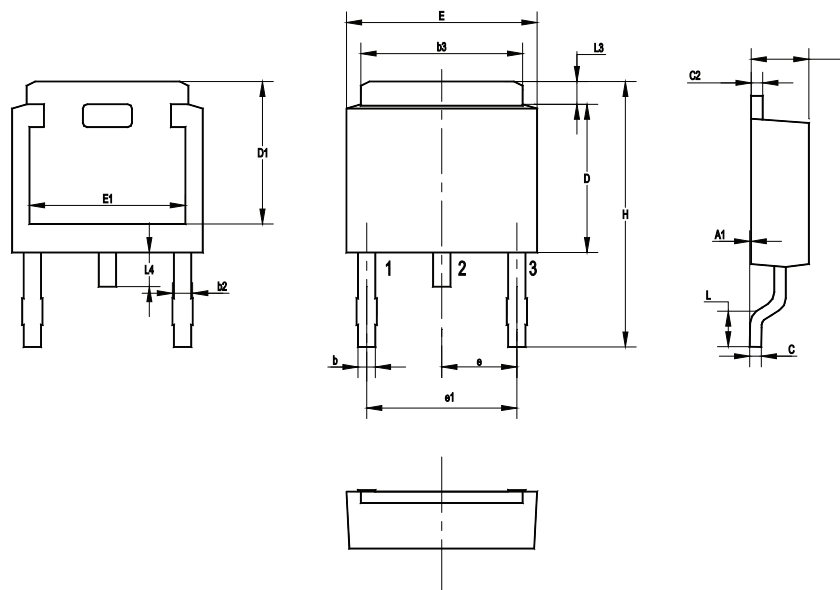


Fig.3-2 Avalanche waveform



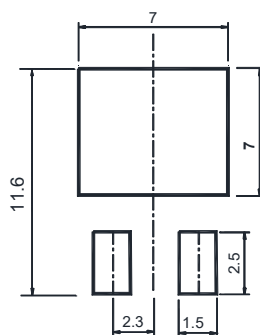
Package Outline (Dimensions in mm)

TO-252



UNIT	A	A1	b	b2	b3	C	C2	D	D1	E	E1	e	e1	H	L	L3	L4
mm	2.5	0.15	1.0	1.15	5.5	0.65	0.65	6.2	5.4	6.7	5.0	2.30	4.60	10.7	1.78	1.20	1.10
	2.1	0	0.5	0.65	4.9	0.4	0.4	5.6	5.0	6.1	4.6	TYP.	TYP.	9	1.40	0.85	0.51

Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
TO-252	16	8 ± 0.1	0.315 ± 0.004	330	13	2,500

Marking information

" TR06N750LS " = Part No.

" ***** " = Date Code Marking

Font type: Arial



Disclaimer: Our company reserve the right to make modifications, enhancements, improvements, corrections or other changes to improve product design, functions and reliability, anytime without notice.