

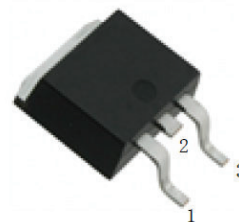
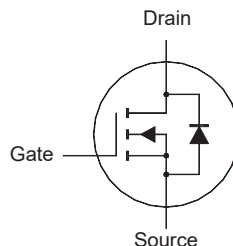
N-Channel Enhancement Mode MOSFET

Features

- Halogen and Antimony Free(HAF),
RoHS compliant

Applications

- For Flyback topologies for example used in Chargers, Adapters, Lighting etc.



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

Key Parameters

Parameter	Value	Unit
BV_{DS}	700	V
$R_{DS(ON)}$ Max	600 @ $V_{GS} = 10V$	m Ω
$V_{GS(th)}$ typ	3	V
Qg typ	25 @ $V_{GS} = 10 V$	nC

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	700	V
Gate-Source Voltage	V_{GS}	± 30	V
Drain Current	I_D	8.5 5	A
Peak Drain Current, Pulsed ¹⁾	I_{DM}	20.5	A
Power Dissipation	P_D	43.1	W
Single-Pulse Avalanche Current	I_{AS}	9	A
Single-Pulse Avalanche Energy ²⁾	E_{AS}	0.4	mJ
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to + 150	$^{\circ}C$

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Case	$R_{\theta JC}$	2.9	$^{\circ}C/W$
Thermal Resistance from Junction to Ambient ³⁾	$R_{\theta JA}$	62	$^{\circ}C/W$

¹⁾ Pulse Test: Pulse Width $\leq 100 \mu s$, Duty Cycle $\leq 2\%$, Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)} = 150^{\circ}C$.

²⁾ Limited by $T_{J(MAX)}$, starting $T_J = 25^{\circ}C$, $L = 0.01 mH$, $R_g = 25 \Omega$, $I_{AS} = 9 A$, $V_{GS} = 10 V$.

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}	700	-	-	V
Drain-Source Leakage Current at $V_{DS} = 700\ \text{V}$	I_{DSS}	-	-	1	μA
Gate Leakage Current at $V_{GS} = \pm 30\ \text{V}$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage at $V_{DS} = V_{GS}$, $I_D = 250\ \mu\text{A}$	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance at $V_{GS} = 10\ \text{V}$, $I_D = 1.8\ \text{A}$	$R_{DS(on)}$	-	-	600	m Ω
DYNAMIC PARAMETERS					
Gate Resistance at $V_{DS} = 0\ \text{V}$, $V_{GS} = 0\ \text{V}$, $f = 1\ \text{MHz}$	R_g	-	4	-	Ω
Input Capacitance at $V_{GS} = 0\ \text{V}$, $V_{DS} = 400\ \text{V}$, $f = 1\ \text{MHz}$	C_{iss}	-	560	-	pF
Output Capacitance at $V_{GS} = 0\ \text{V}$, $V_{DS} = 400\ \text{V}$, $f = 1\ \text{MHz}$	C_{oss}	-	20	-	pF
Reverse Transfer Capacitance at $V_{GS} = 0\ \text{V}$, $V_{DS} = 400\ \text{V}$, $f = 1\ \text{MHz}$	C_{rss}	-	5	-	pF
Gate Charge Total at $V_{DD} = 400\ \text{V}$, $V_{GS} = 10\ \text{V}$, $I_D = 1.4\ \text{A}$	Q_g	-	25	-	nC
Gate to Source Charge at $V_{DD} = 400\ \text{V}$, $V_{GS} = 10\ \text{V}$, $I_D = 1.4\ \text{A}$	Q_{gs}	-	3.4	-	nC
Gate to Drain Charge at $V_{DD} = 400\ \text{V}$, $V_{GS} = 10\ \text{V}$, $I_D = 1.4\ \text{A}$	Q_{gd}	-	13.5	-	nC
Turn-On Delay Time at $V_{DD} = 400\ \text{V}$, $V_{GS} = 13\ \text{V}$, $I_D = 1.4\ \text{A}$, $R_G = 5.3\ \Omega$	$t_{d(on)}$	-	8	-	ns
Turn-On Rise Time at $V_{DD} = 400\ \text{V}$, $V_{GS} = 13\ \text{V}$, $I_D = 1.4\ \text{A}$, $R_G = 5.3\ \Omega$	t_r	-	20	-	ns
Turn-Off Delay Time at $V_{DD} = 400\ \text{V}$, $V_{GS} = 13\ \text{V}$, $I_D = 1.4\ \text{A}$, $R_G = 5.3\ \Omega$	$t_{d(off)}$	-	55	-	ns
Turn-Off Fall Time at $V_{DD} = 400\ \text{V}$, $V_{GS} = 13\ \text{V}$, $I_D = 1.4\ \text{A}$, $R_G = 5.3\ \Omega$	t_f	-	41	-	ns
Body-Diode PARAMETERS					
Drain-Source Diode Forward Voltage at $I_S = 2.5\ \text{A}$, $V_{GS} = 0\ \text{V}$	V_{SD}	-	-	1.2	V
Body-Diode Continuous Current	I_S	-	-	8.5	A
Body-Diode Continuous Current, Pulsed	I_{SM}	-	-	20.5	A
Body Diode Reverse Recovery Time at $V_R = 200\ \text{V}$, $I_S = 1.4\ \text{A}$, $di/dt = 50\ \text{A} / \mu\text{s}$	t_{rr}	-	230	-	ns
Body Diode Reverse Recovery Charge at $V_R = 200\ \text{V}$, $I_S = 1.4\ \text{A}$, $di/dt = 50\ \text{A} / \mu\text{s}$	Q_{rr}	-	1	-	μC

Electrical Characteristics Curves

Fig 1. Input Curve

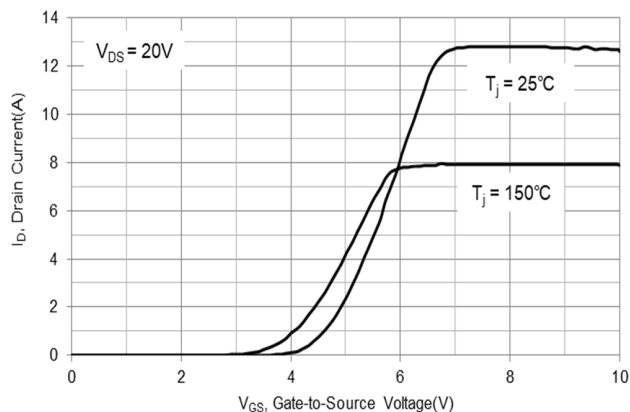


Fig 2. Output Curve

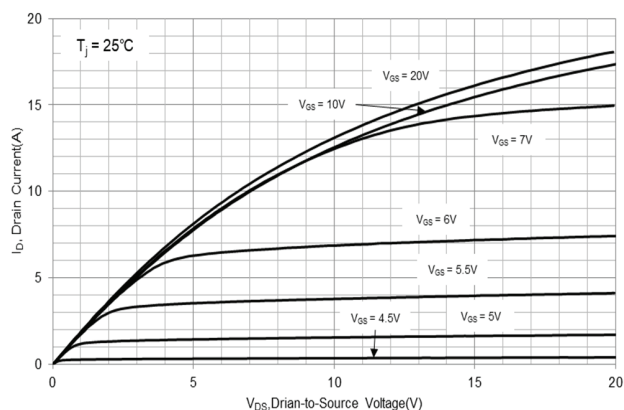


Fig 3. Output Curve

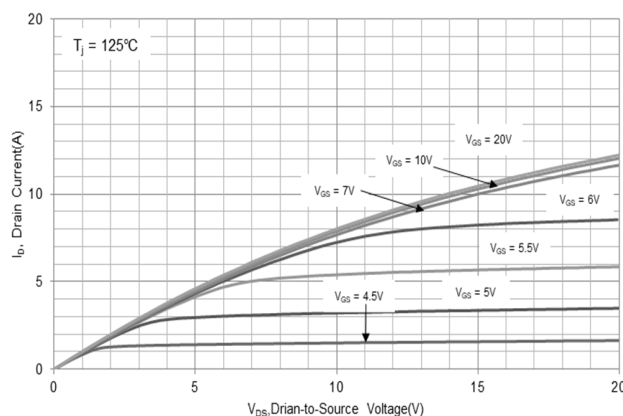


Fig 4. $R_{DS(on)} - T_J$

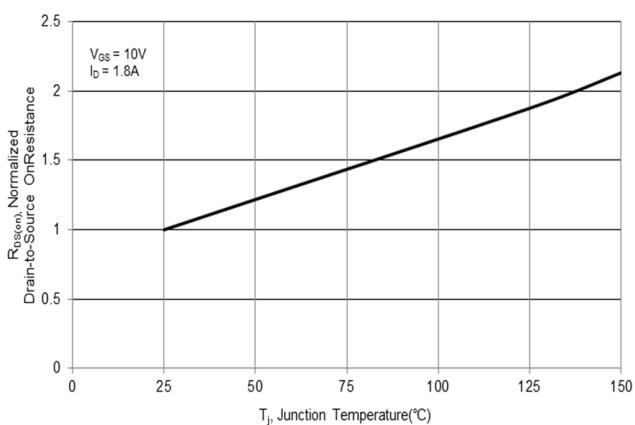


Fig 5. Body-Diode $I_S - V_{SD}$ Curve

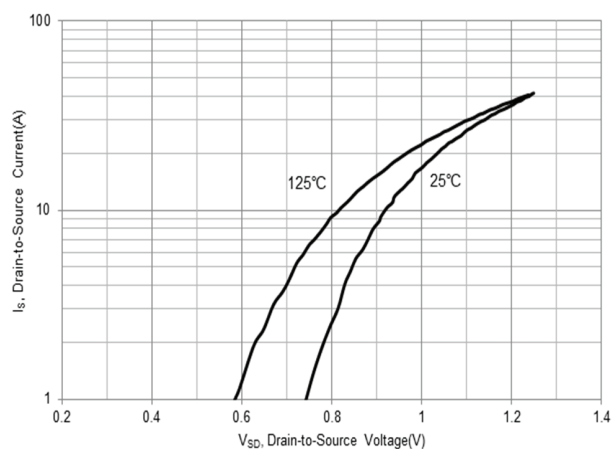
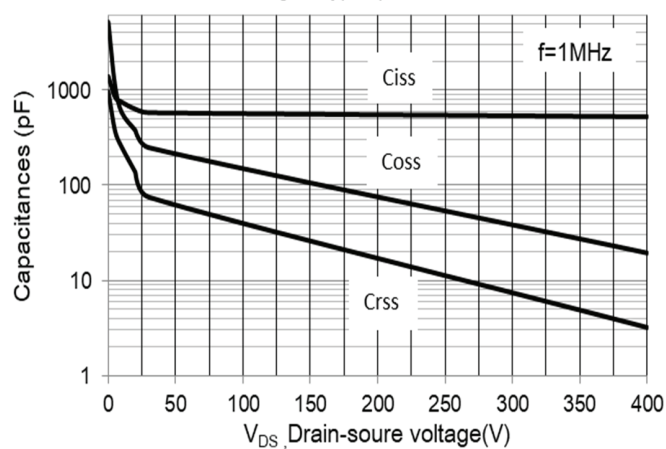


Fig 6. Typ capacitances



Electrical Characteristics Curves

Fig 7. Gate Charge

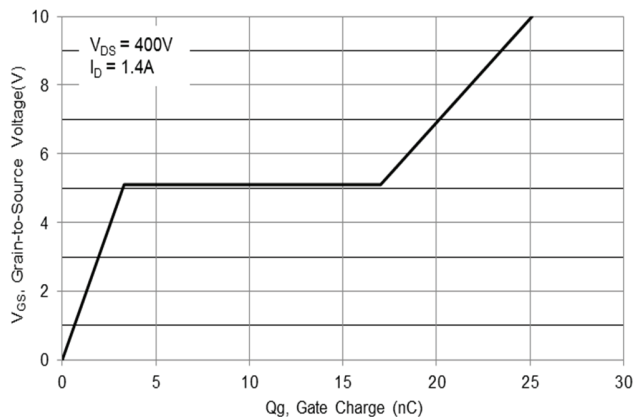


Fig 8. $B_{V_{DS}} - T_J$

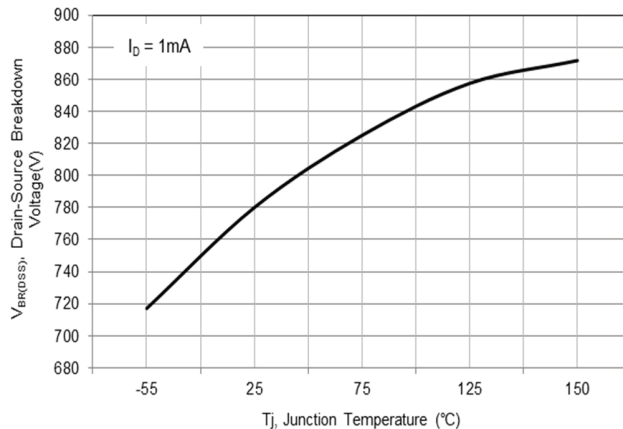
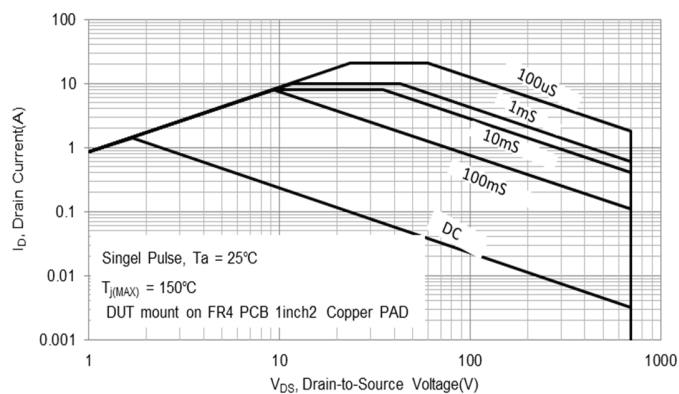


Fig 9. Safe Operating Area



Test Circuits

Fig.1-1 Switching times test circuit

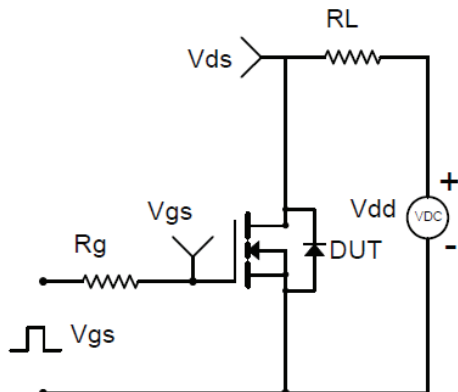


Fig.1-2 Switching Waveform

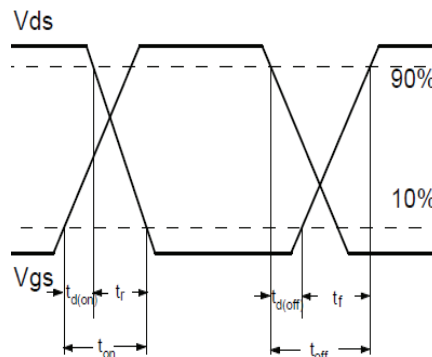


Fig.2-1 Gate charge test circuit

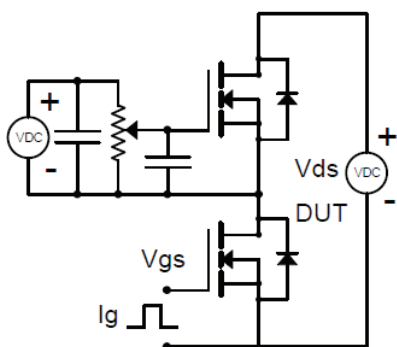


Fig.2-2 Gate charge waveform

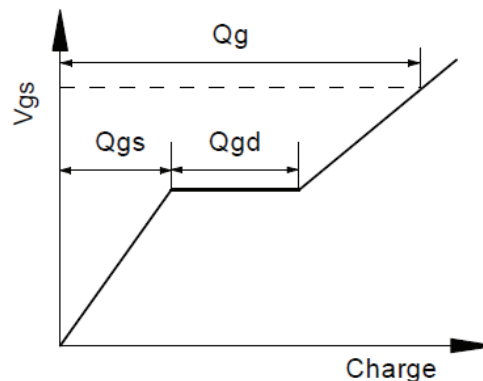


Fig.3-1 Avalanche test circuit

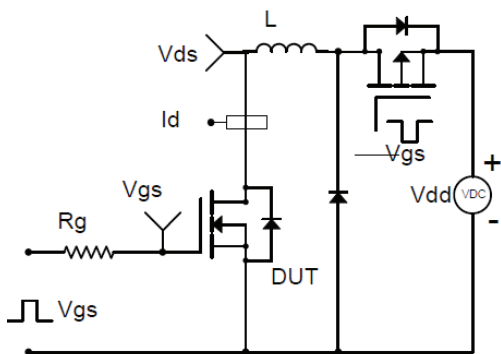
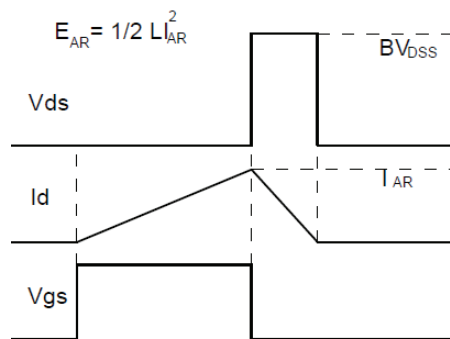
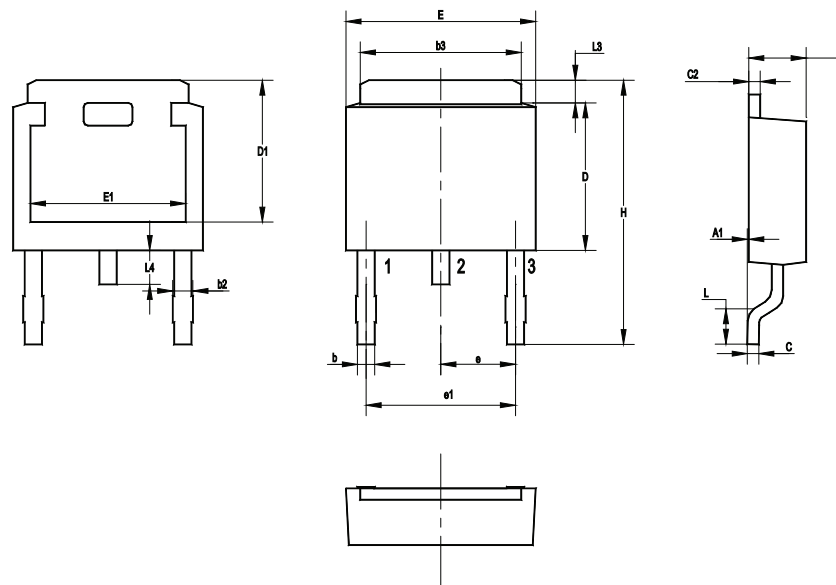


Fig.3-2 Avalanche waveform



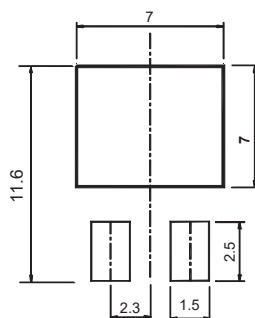
Package Outline Dimensions (Units: mm)

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

" SFTN7060R " = 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.