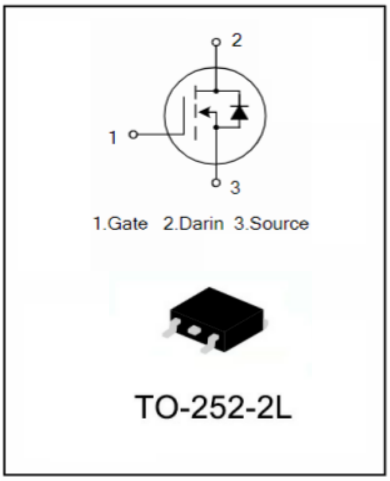
80A, 30V N-CHANNEL MOSFET

GENERAL DESCRIPTION

The SFD3008T uses advanced trench technology and design to provide excellent R_{DS}(ON) with low gate charge. It can be used in a wide variety of applications.



FEATURES

- 80A,30V,$R_{DS(on)(typ.)}$=4.8mΩ@V_{GS}=10V
- Excellent package for good heat dissipation
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- High density cell design for ultra low Rdson
- Special process technology for high ESD capability
- Exceptional on-resistance and maximum DC currentcapability

ORDERING INFORMATION

Part No.	Package	Marking	Material	Packing
SFD3008T	TO-252-2L	SFD3008T	Pb free	Reel

ABSOLUTE MAXIMUM RATINGS (T_C = 25℃ unless otherwise noted)

Characteristics		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current	T_C = 25°C	I_D	80	A
	T_C = 70°C		46	
Drain Current Pulsed (Note 1)		I_{DM}	280	A
Single Pulsed Avalanche Energy (Note 2)		E_{AS}	56	mJ
Maximum Power Dissipation		P_D	46	W
Operation Junction Temperature Range		T_J	-55～+150	°C
Storage Temperature Range		T_{stg}	-55～+150	°C

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	2.52	℃/W

Electrical Characteristics (T_J = 25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA,	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =30V, V_{GS} = 0V	-	-	1.0	μA
I_{GSS}	Gate-Body Leakage Current, Forward	V_{GS} = ±20V, V_{DS} = 0V	-	-	±100	nA
OnCharacteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	1.0	1.5	2.5	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	V_{GS} = 10V, I_D = 30A	-	4.8	6	mΩ
$R_{DS(on)}$	(Note 3)	V_{GS} = 4.5V, I_D = 20A	-	7.5	12	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} =15V, V_{GS} = 0V, f =1.0MHz	-	1614	-	pF
C_{oss}	Output Capacitance		-	245	-	pF
C_{rss}	Reverse Transfer Capacitance		-	215	-	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}= 15V, I_D=30A,V_{GS}= 10V R_{GEN} =3.0Ω	-	7.5	-	ns
t_r	Turn-On Rise Time		-	14.5	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	35.2	-	ns
t_f	Turn-Off Fall Time		-	9.6	-	ns
Q_g	Total Gate Charge	V_{DS} = 15V, I_D =30A, V_{GS} =10V	-	33.7	-	nC
Q_{gs}	Gate-Source Charge		-	8.5	-	nC
Q_{gd}	Gate-Drain Charge		-	7.5	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain-Source Diode Forward Current		-	-	80	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current				280	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} = 0V, I_S = 30A	-	-	1.2	V

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: TJ=25℃,V_{DD}=15V,V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=15A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Performance Characteristics

Figure1: Output Characteristics

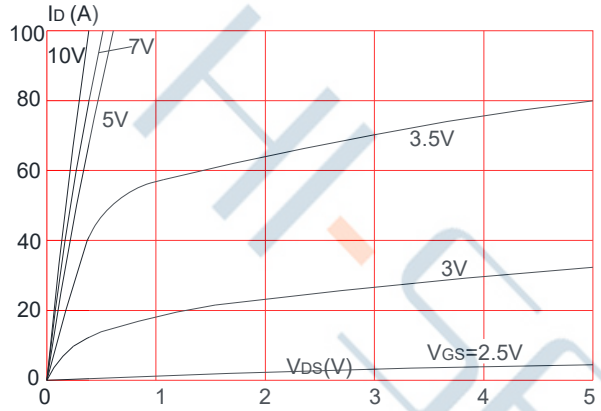


Figure 2: Typical Transfer Characteristics

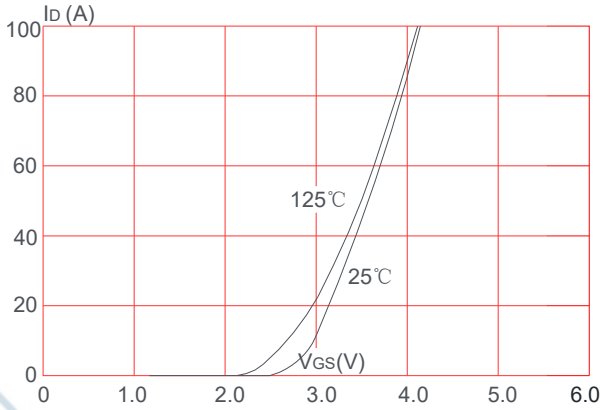


Figure 3: On-resistance vs. Drain Current

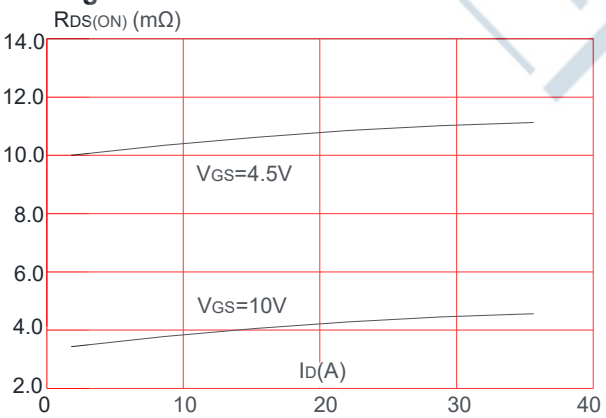


Figure 4: Body Diode Characteristics

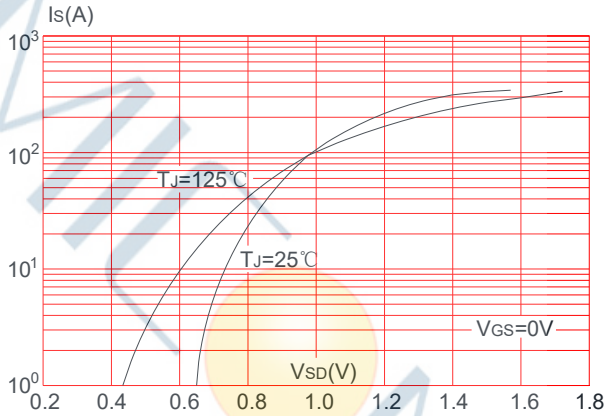


Figure 5: Gate Charge Characteristics

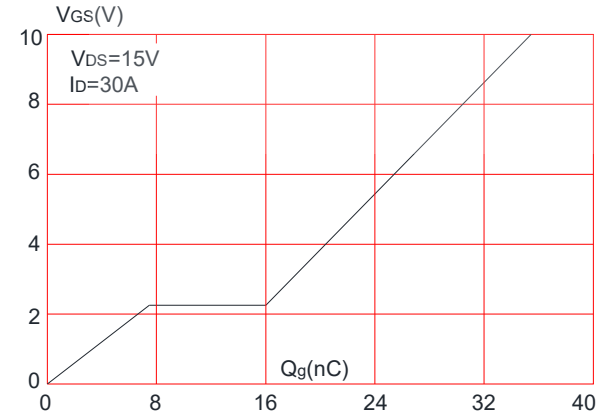


Figure 6: Capacitance Characteristics

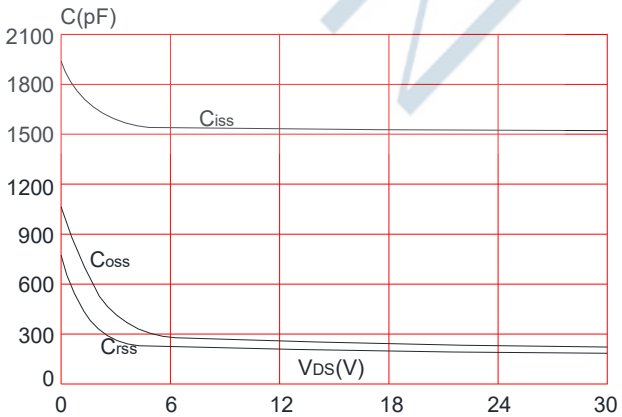


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

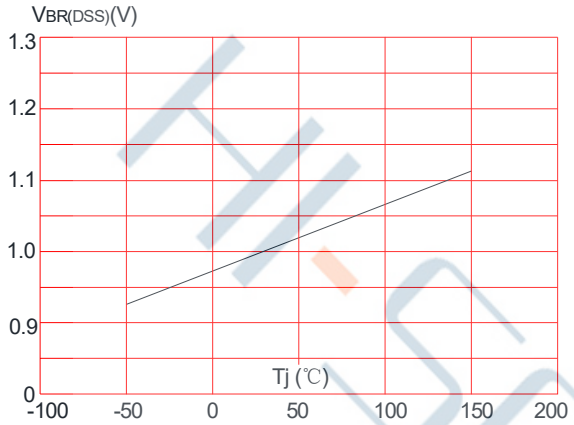


Figure 8: Normalized on Resistance vs. Junction Temperature

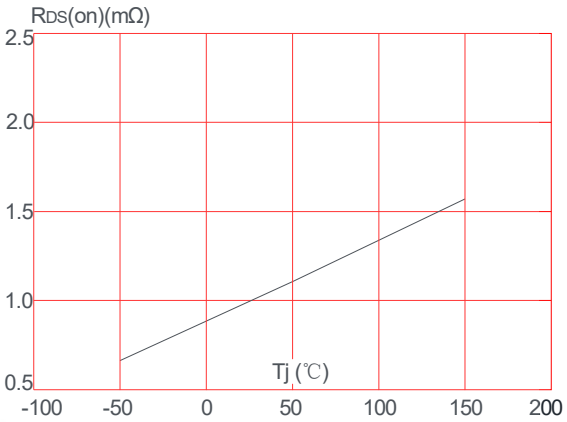


Figure 9: Maximum Safe Operating Area

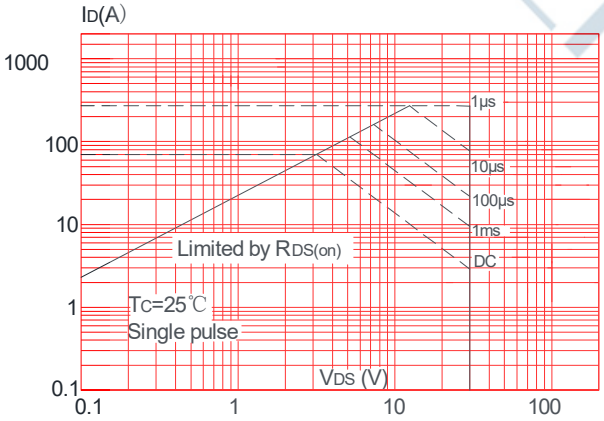


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

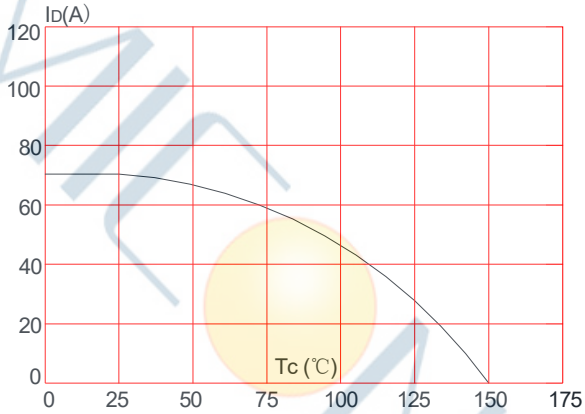
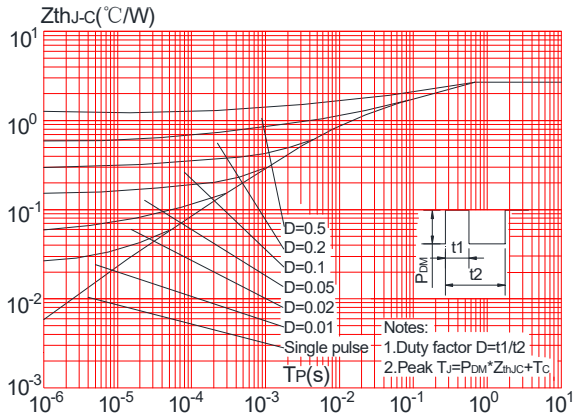


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Test Circuit

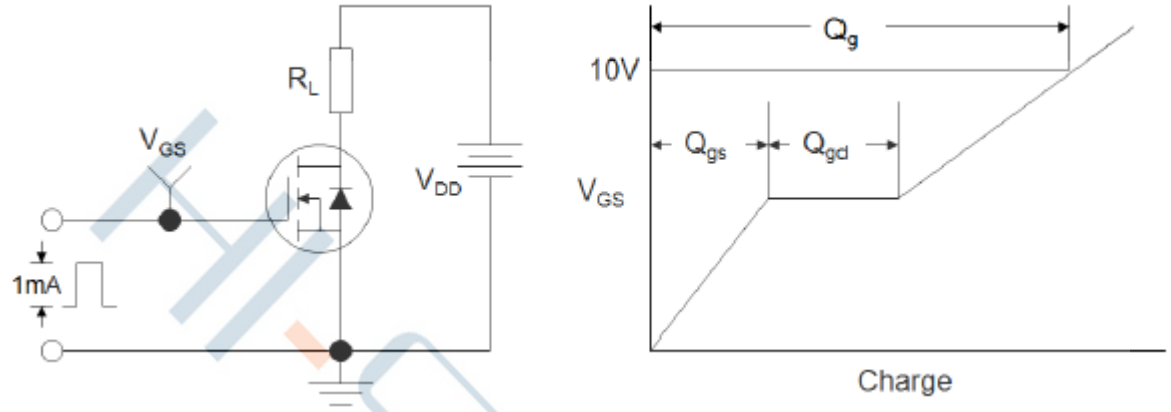


Figure1:Gate Charge Test Circuit & Waveform

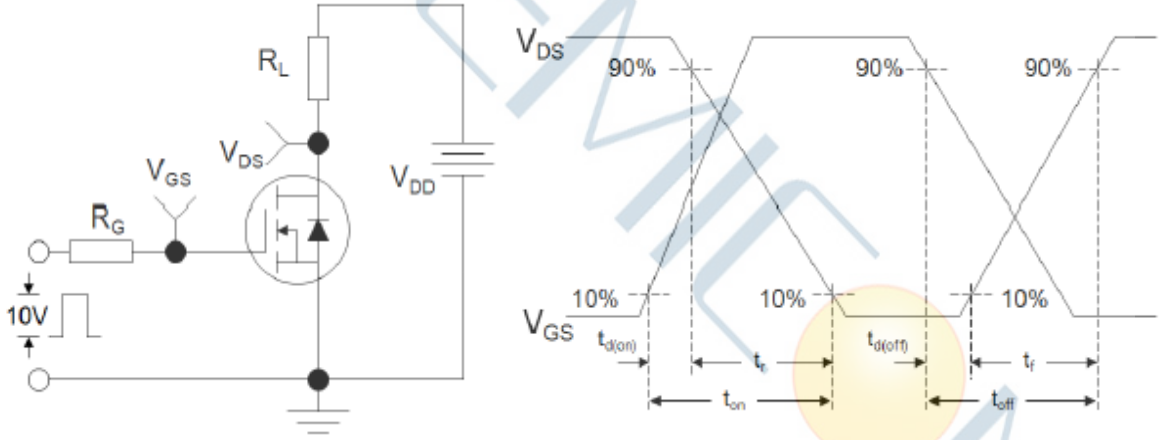


Figure 2: Resistive Switching Test Circuit & Waveforms

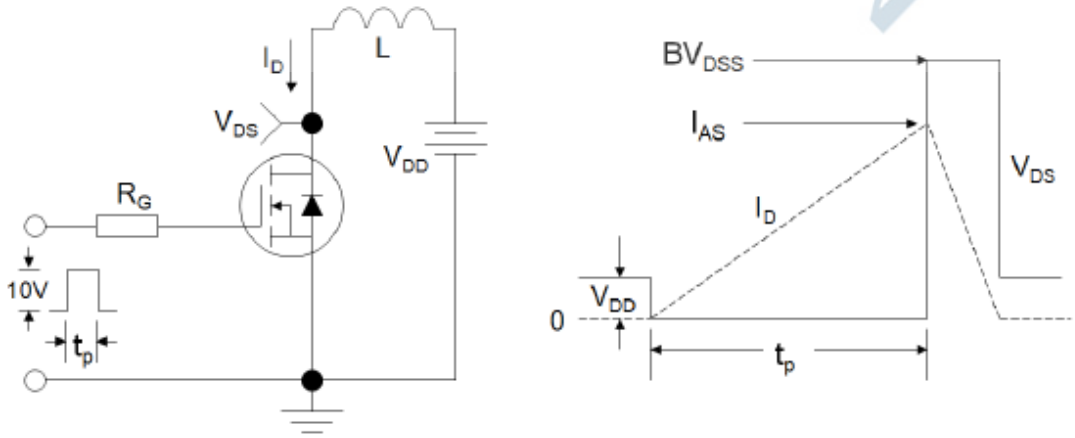
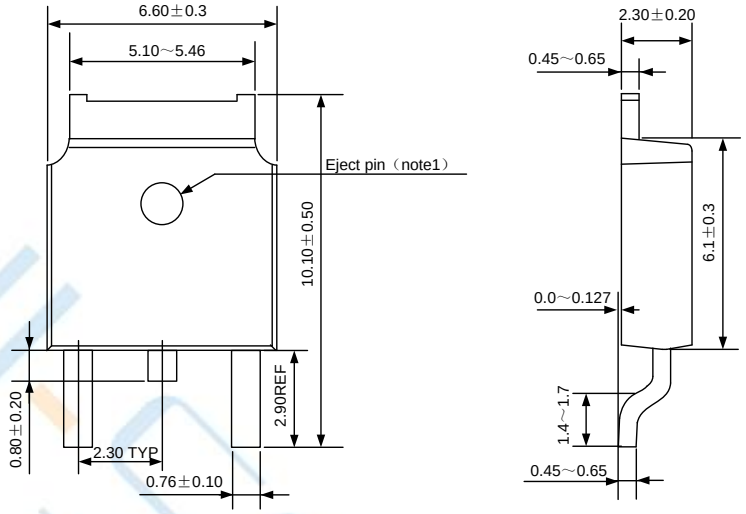


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

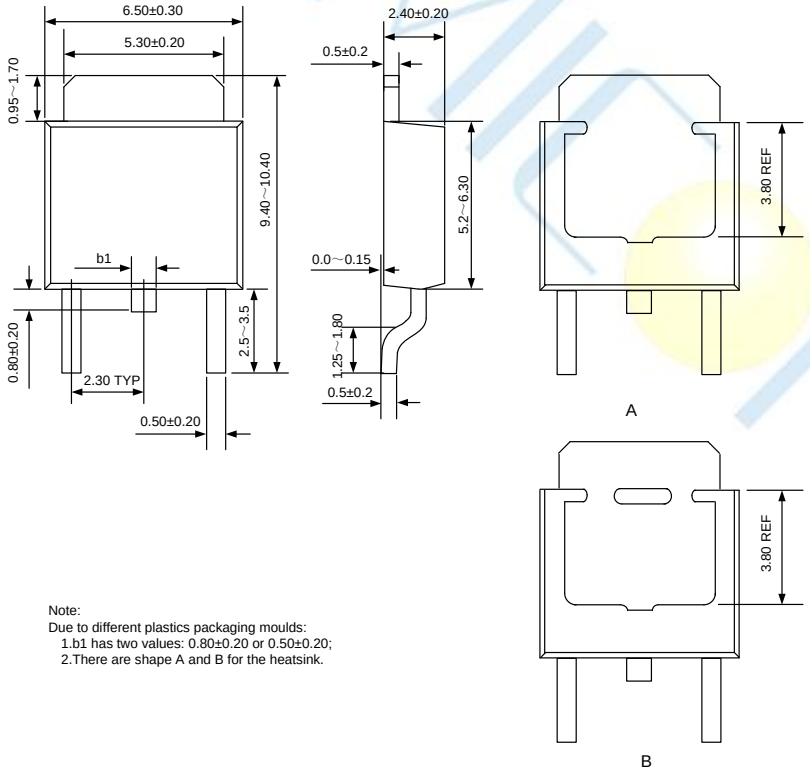
PACKAGE OUTLINE(continued)

TO-252-2L(1) UNIT: mm



NOTE1 There are two conditions for this position:has an eject pin or has no eject pin.

TO-252-2L(2) UNIT: mm



Note:
Due to different plastics packaging moulds:
1.b1 has two values: 0.80±0.20 or 0.50±0.20;
2.There are shape A and B for the heatsink.