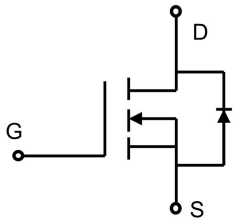
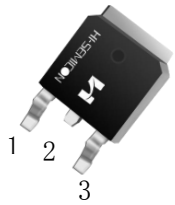
80A,20VN-CHANNELMOSFET

GENERAL DESCRIPTION

The SFD2008T uses hi-semicon's 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.





1:Gate 2:Darin 3:Source

FEATURES

- R_{DS}(on)(typ.)=4.0mΩ@V_{GS}=4.5V
  R_{DS}(on)(typ.)=6.5mΩ@V_{GS}=2.5V
- 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

Application

- Load Switch
- PWM Application
- Power management

ORDERING INFORMATION

Part No.	Package	Marking	Material	Packing
SFD2008T	TO-252-2L	SFD2008T	Pb free	Reel

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

Characteristics		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±12	V
Drain Current	T_C = 25°C	I_D	80	A
	T_C = 100°C		49	
Drain Current Pulsed (Note 1)		I_{DM}	300	A
Single Pulsed Avalanche Energy (Note 2)		E_{AS}	56.5	mJ
Maximum Power Dissipation		P_D	57	W
Operation Junction Temperature Range		T_J	-55～+150	°C
Storage Temperature Range		T_{stg}	-55～+150	°C
Thermal Resistance, Junction-to-Case		$R_{\theta JC}$	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,	20	-	-	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	0.5	0.7	1.1	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	V_{GS} = 4.5V, I_D = 30A	-	4.0	6	mΩ
$R_{DS(on)}$	(Note 3)	V_{GS} = 2.5V, I_D = 20A	-	6.5	10	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} =15V, V_{GS} = 0V, f =1.0MHz	-	2800	-	pF
C_{oss}	Output Capacitance		-	353	-	pF
C_{rss}	Reverse Transfer Capacitance		-	265	-	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}= 10V, I_D=20A,V_{GS}= 4.5V R_{GEN} =3.0Ω	-	17	-	ns
t_r	Turn-On Rise Time		-	49	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	74	-	ns
t_f	Turn-Off Fall Time		-	26	-	ns
Q_g	Total Gate Charge	V_{DS} = 15V, I_D =20A, V_{GS}=10V	-	32	-	nC
Q_{gs}	Gate-Source Charge		-	3	-	nC
Q_{gd}	Gate-Drain Charge		-	11	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain-Source Diode Forward Current		-	-	75	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current				300	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}=10V,V_G=4.5V, 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

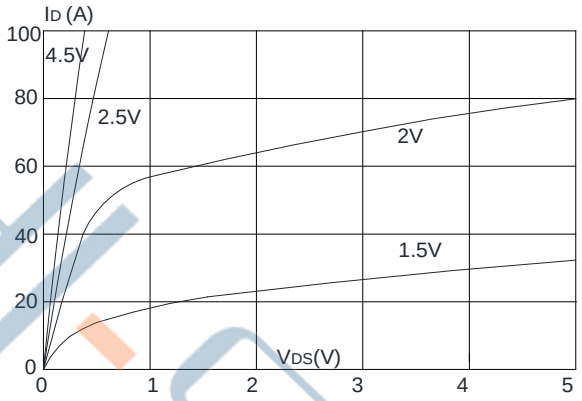


Figure 2: Typical Transfer Characteristics

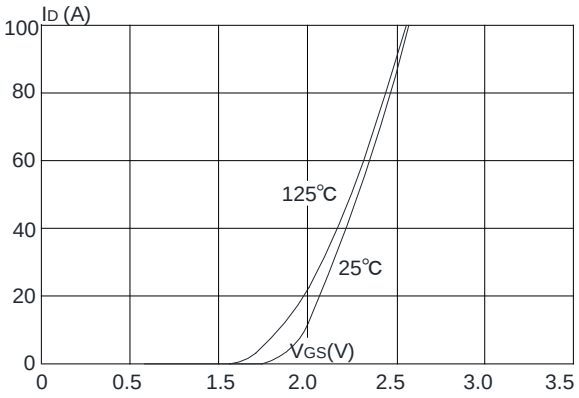


Figure 3: On-resistance vs. Drain Current

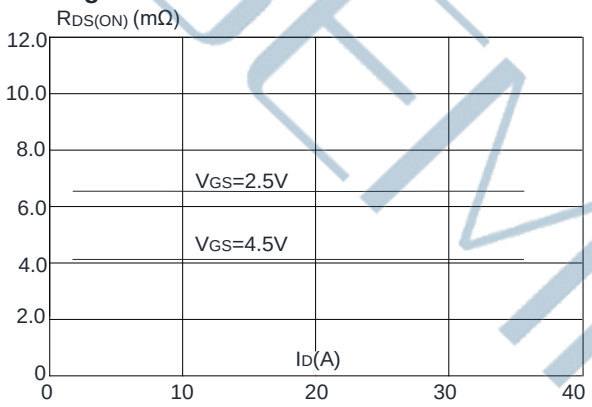


Figure 4: Body Diode Characteristics

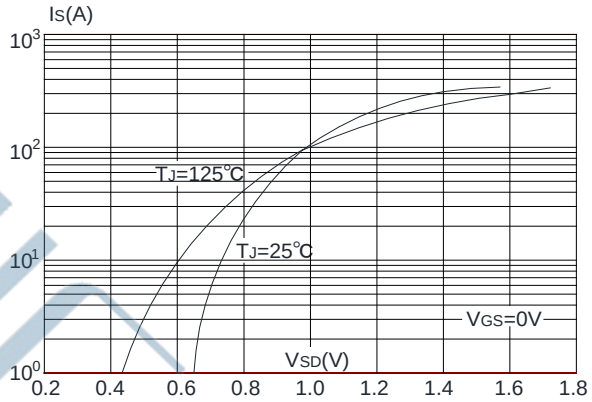


Figure 5: Gate Charge Characteristics

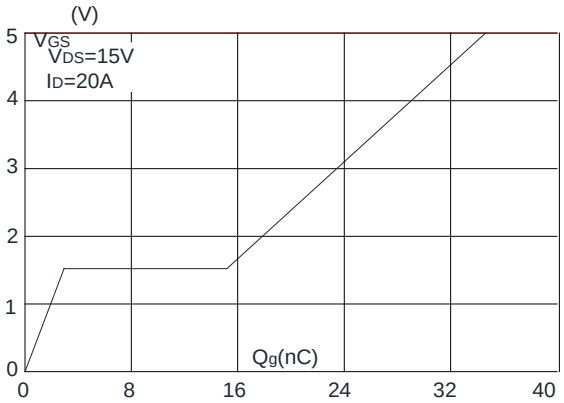


Figure 6: Capacitance Characteristics

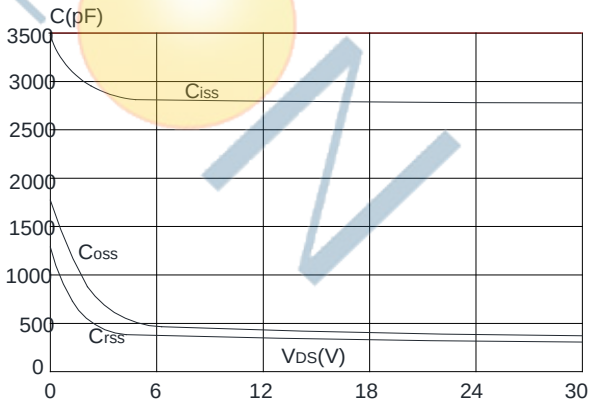


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

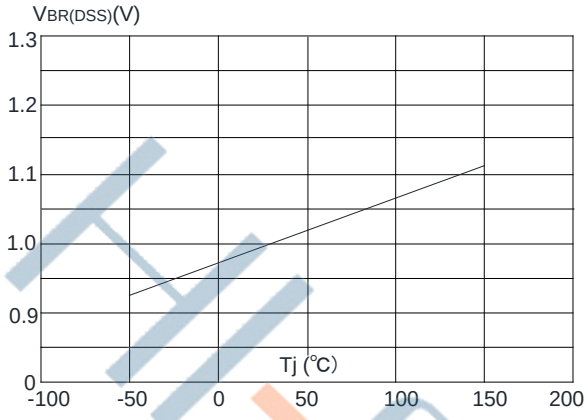


Figure 8: Normalized on Resistance vs. Junction Temperature

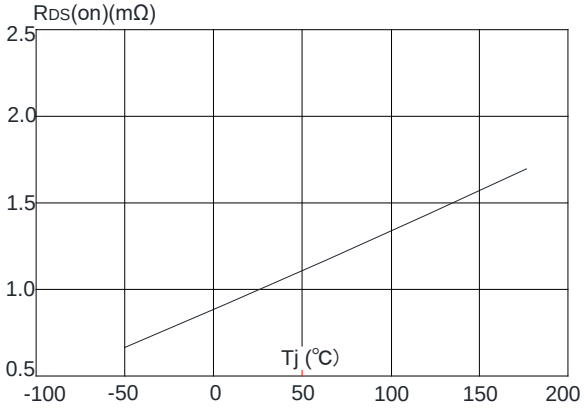


Figure 9: Maximum Safe Operating Area

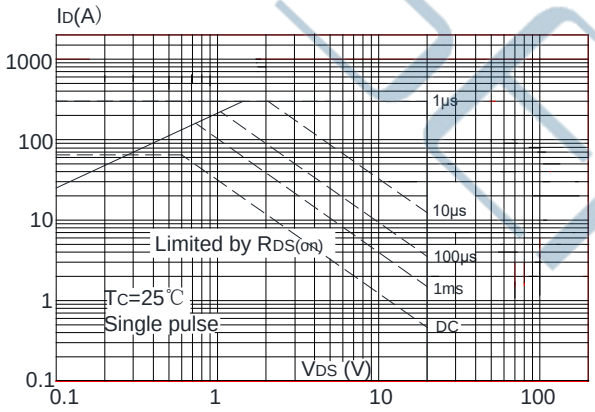


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

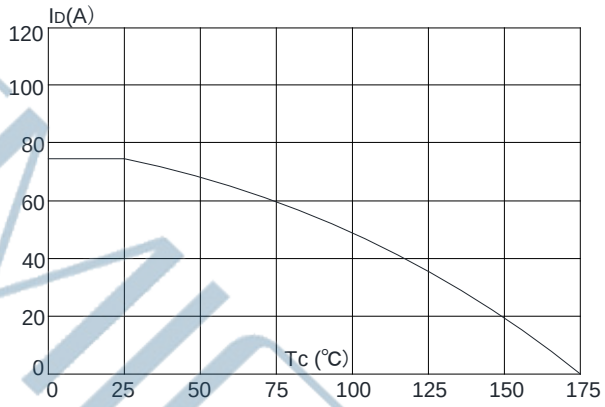
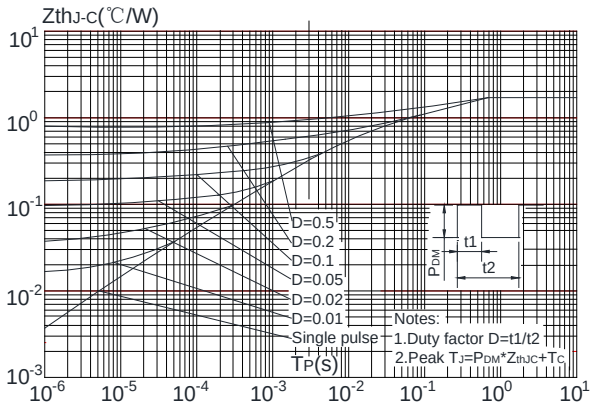
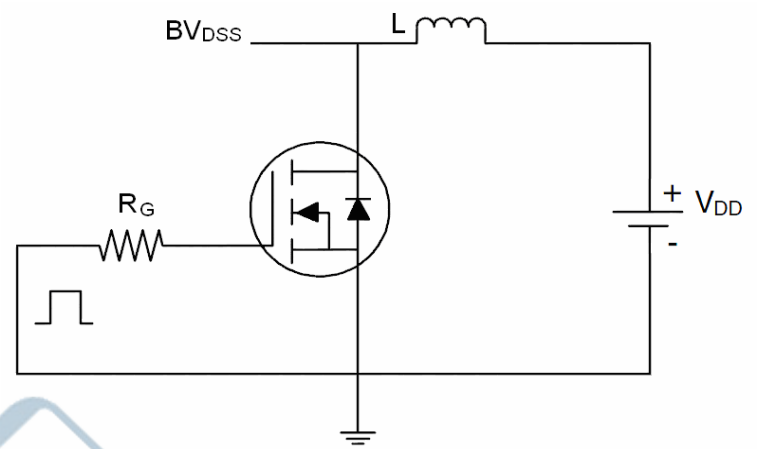


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

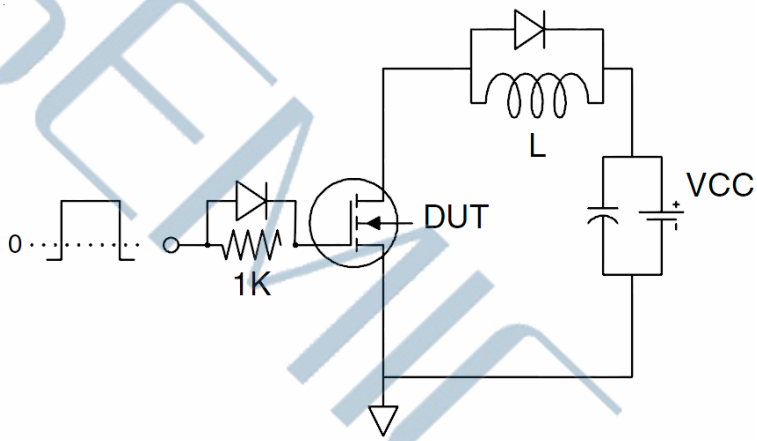


Test Circuit

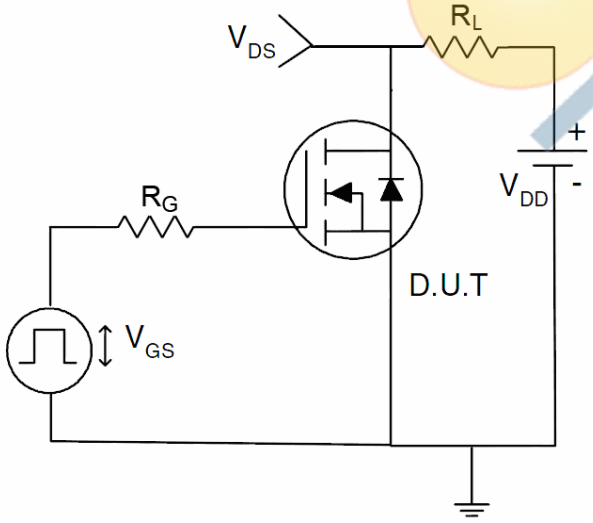
1) E_{AS} Test Circuit



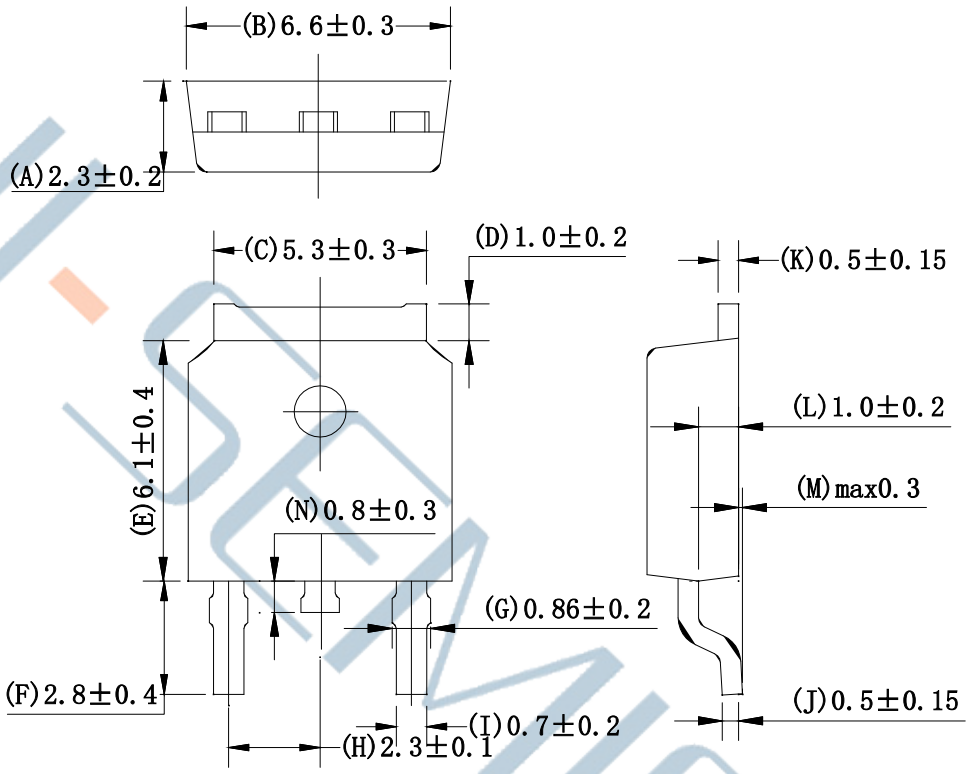
2) Gate Charge Test Circuit



3) Switch Time Test Circuit



Package Dimensions of TO-252-2L **Unit:mm**



Package Dimensions of TO-252-2L **Unit:mm**