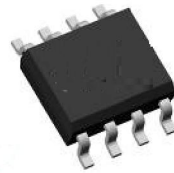
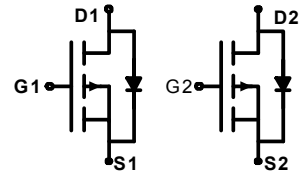
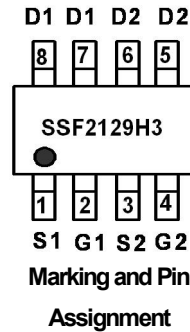


Main Product Characteristics

V_{DSS}	-20V
$R_{DS(on)}$	21m Ω (typ.)
I_D	-6.0A



SOP-8



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150°C operating temperature
- Lead free product



Description

It utilizes the latest processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications.

Absolute Max Rating

Symbol	Parameter	Max.	Units
$I_D @ TC = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$ ①	-6	A
I_{DM}	Pulsed Drain Current②	-24	
$P_D @ TC = 25^\circ C$	Power Dissipation③	2.0	W
	Linear Derating Factor	0.016	W/°C
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-to-Source Voltage	± 8	V
$T_J T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	°C

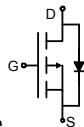
Thermal Resistance

Symbol	Characteristics	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case③	—	40	°C/W
$R_{\theta JA}$	Junction-to-ambient ($t \leq 10s$) ④	—	78	°C/W

Electrical Characteristics @ $T_A=25^{\circ}\text{C}$ unless otherwise specified

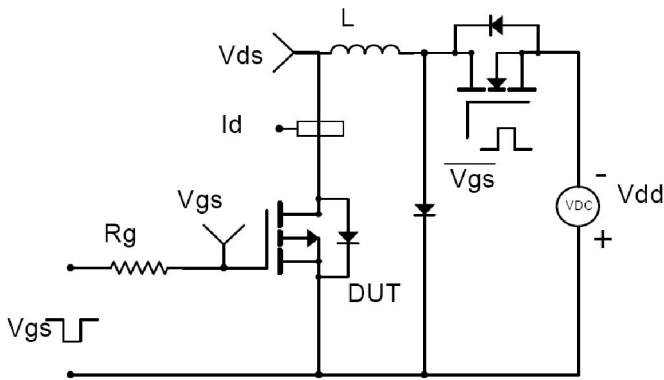
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	-20	—	—	V	$V_{GS} = 0V, I_D = -250\mu A$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	21	30	m Ω	$V_{GS}=-4.5V, I_D = -6A$
		—	33	40	m Ω	$V_{GS}=-2.5V, I_D = -5.3A$
$V_{GS(th)}$	Gate threshold voltage	-0.4	—	-1.5	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	$V_{DS} = -20V, V_{GS} = 0V$ $T_J = 125^{\circ}\text{C}$
		—	—	50		
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS} = 8V$
		—	—	-100		$V_{GS} = -8V$
Q_g	Total gate charge	—	24	—	nC	$I_D = -6A,$ $V_{DS}=-10V,$ $V_{GS} = -5V$
Q_{gs}	Gate-to-Source charge	—	4.2	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	5.6	—		
$t_{d(on)}$	Turn-on delay time	—	8.1	—	ns	$V_{GS}=-4.5V, V_{DS}=-10V,$ $I_D = -1A,$ $R_{GEN}=6\Omega$
t_r	Rise time	—	15.2	—		
$t_{d(off)}$	Turn-Off delay time	—	98	—		
t_f	Fall time	—	35	—		
C_{iss}	Input capacitance	—	2819	—	pF	$V_{GS} = 0V$ $V_{DS} = -10V$ $f = 1\text{MHz}$
C_{oss}	Output capacitance	—	262	—		
C_{rss}	Reverse transfer capacitance	—	196	—		

Source-Drain Ratings and Characteristics

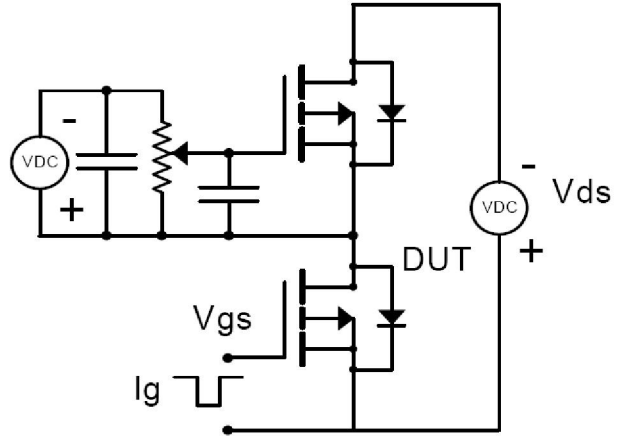
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	-6	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	-24	A	
V_{SD}	Diode Forward Voltage	—	—	-1.0	V	$I_S=-2.9A, V_{GS}=0V$

Test Circuits and Waveforms

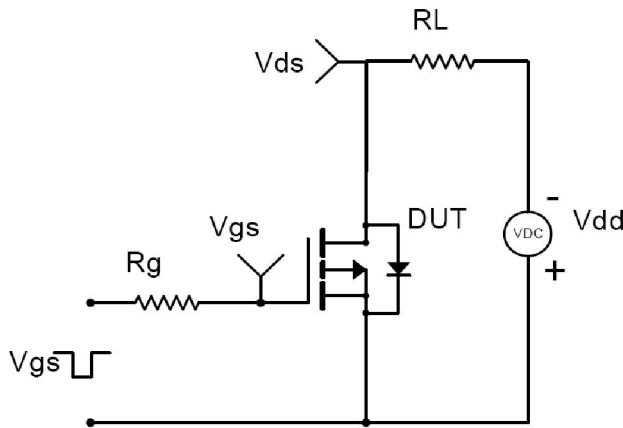
EAS test circuit:



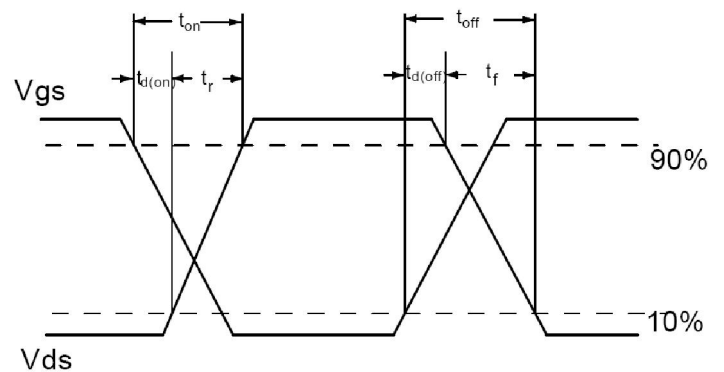
Gate charge test circuit:



Switching time test circuit:



Switch Waveforms:



Notes:

- ① Calculated continuous current based on maximum allowable junction temperature.
- ② Repetitive rating; pulse width limited by max junction temperature.
- ③ The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$
- ④ These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of $T_{J(MAX)} = 150^\circ\text{C}$.

Typical Electrical and Thermal Characteristics

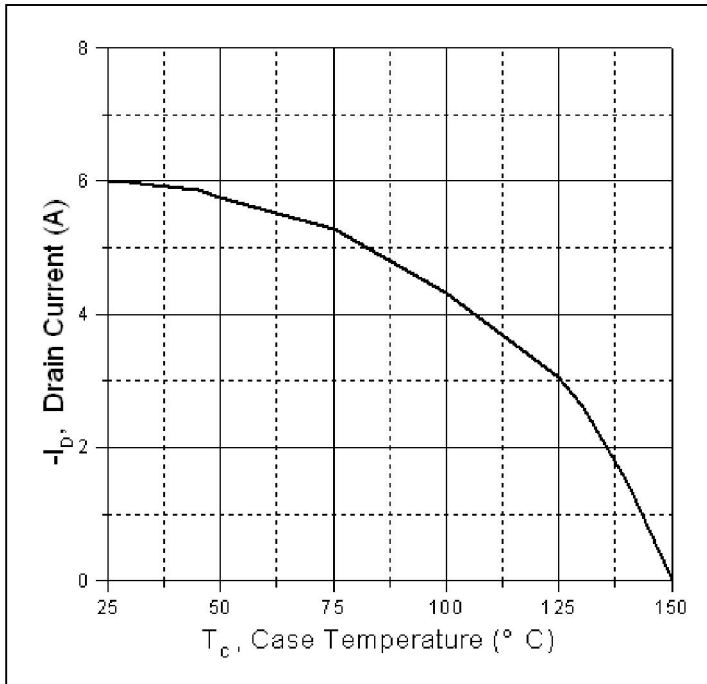


Figure 1. Maximum Drain Current Vs. Case Temperature

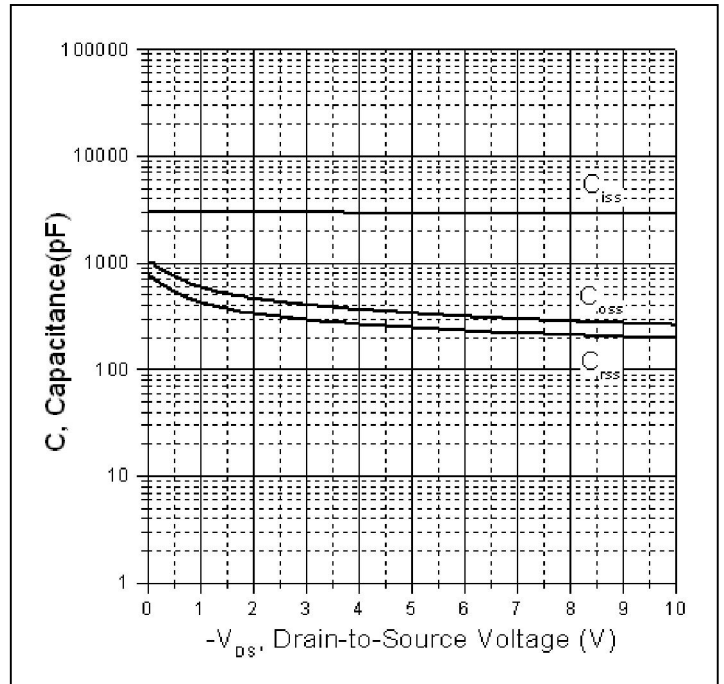


Figure 2. Typical Capacitance Vs. Drain-to-Source Voltage

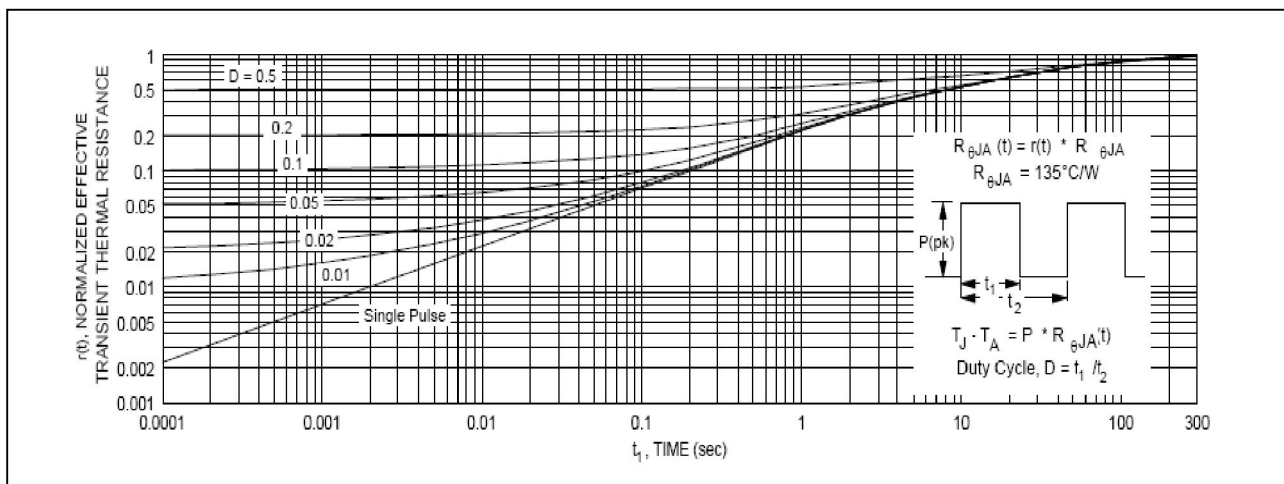
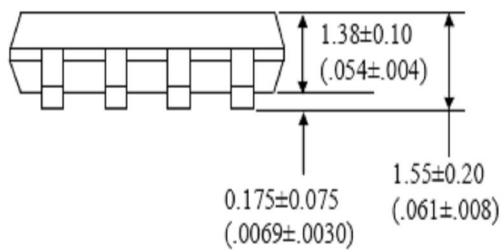
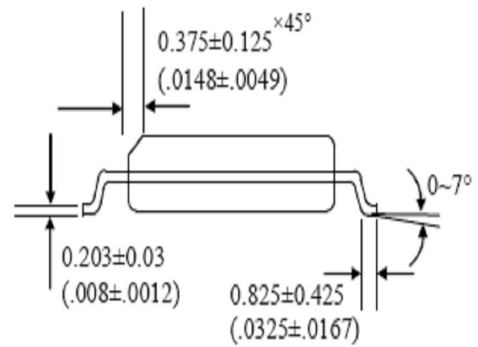
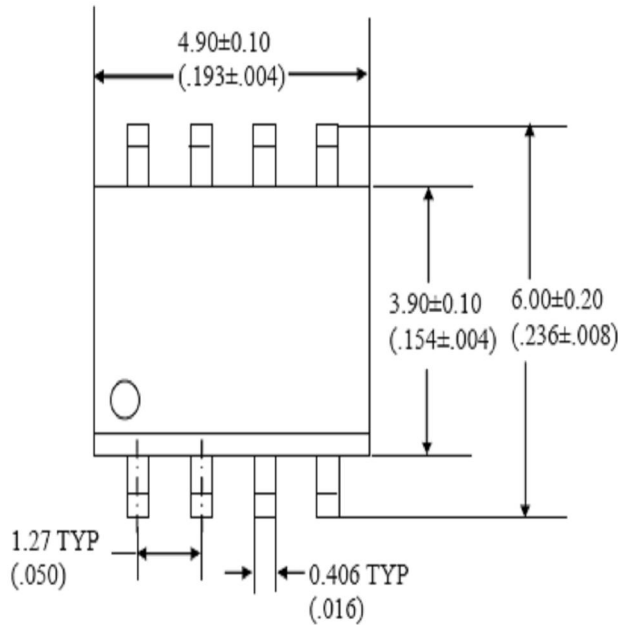


Figure3. Maximum Effective Transient Thermal Impedance, Junction-to-Case

Mechanical Data

SOP8 PACKAGE OUTLINE DIMENSION





Ordering and Marking Information

Device Marking: SSF2129H3

Package (Available)
SOP-8
Operating Temperature Range
C : -55 to 150 °C

Devices per Unit

Package Type	Units/Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Carton Box	Units/Carton Box
SOP-8	2500	2	5000	8	40000

Reliability Test Program

Test Item	Conditions	Duration	Sample Size
High Temperature Reverse Bias(HTRB)	$T_j=125^{\circ}\text{C}$ or 150°C @ 80% of Max $V_{\text{DSS}}/V_{\text{CES}}/V_{\text{R}}$	168 hours 500 hours 1000 hours	3 lots x 77 devices
High Temperature Gate Bias(HTGB)	$T_j=125^{\circ}\text{C}$ or 150°C @ 100% of Max V_{GSS}	168 hours 500 hours 1000 hours	3 lots x 77 devices