

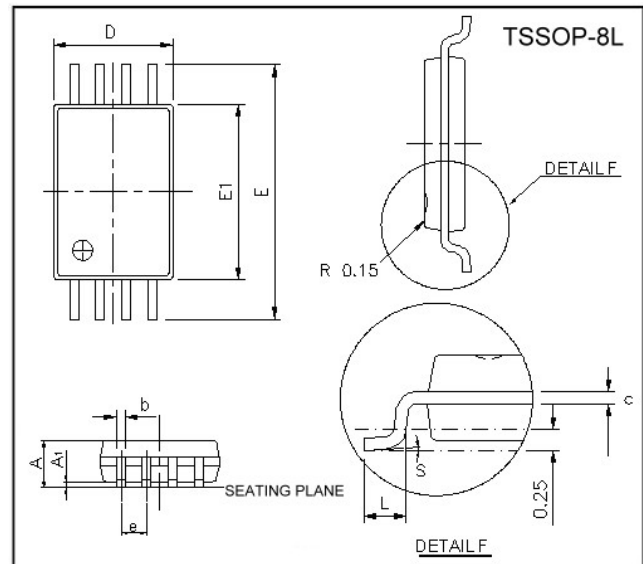
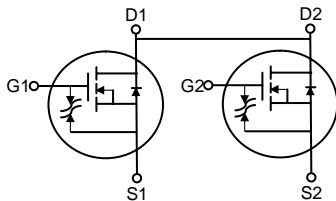
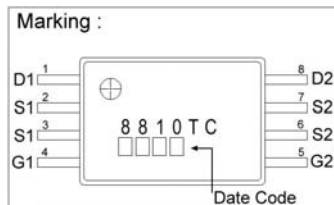
Description

The SGT8100 used advanced trench technology to provide excellent on-resistance which is an extremely efficient and cost-effective device. It also provides low gate charge and operates with gate voltages as low as 1.8 V. Suitable usage in load switch and/or PWM applications.

This device is ESD protected.

Features

- * ESD Rating: 2 kV HBM
- * Low on-resistance
- * Capable of 1.8V gate drive



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	-	1.20	E	6.20	6.60
A1	0.05	0.15	E1	4.30	4.50
b	0.19	0.30	e	0.65 BSC	
c	0.09	0.20	L	0.45	0.75
D	2.90	3.10	S	0°	8°

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V _{DS}	20	V
Gate-Source Voltage	V _{GS}	±8	V
Continuous Drain Current ³	I _D @T _A =25°C	7.0	A
Continuous Drain Current ³	I _D @T _A =70°C	5.7	A
Pulsed Drain Current ^{1,2}	I _{DM}	30	A
Total Power Dissipation	P _D @T _A =25°C	1	W
Linear Derating Factor		0.008	W/°C
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55~+150	°C

Thermal Data

Parameter	Symbol	Ratings	Unit
Thermal Resistance Junction-ambient ³	R _{thj-a}	125	°C/W

Electrical Characteristics(T_j=25°C Unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Drain-Source Breakdown Voltage	BV _{DSS}	20	-	-	V	V _{GS} =0V, I _D =250uA
Gate Threshold Voltage	V _{GS(th)}	0.4	-	1.0	V	V _{DS} =V _{GS} , I _D =250uA
Gate Resistance	R _g	-	1.5	-	Ω	f=1.0MHz
Gate-Source Leakage Current	I _{GSS}	-	-	±10	uA	V _{GS} = ±8V
Drain-Source Leakage Current (T _j =25°C)	I _{DSS}	-	-	1	uA	V _{DS} =20V, V _{GS} =0
Drain-Source Leakage Current(T _j =55°C)		-	-	5	uA	V _{DS} =16V, V _{GS} =0
Static Drain-Source On-Resistance ²	R _{DS(ON)}	-	-	20	mΩ	V _{GS} =4.5V, I _D =7A
		-	-	24		V _{GS} =2.5V, I _D =5.5A
		-	-	32		V _{GS} =1.8V, I _D =5A
Total Gate Charge ²	Q _g	-	16	-	nC	I _D =7 A V _{DS} =10V V _{GS} = 4.5V
Gate-Source Charge	Q _{gs}	-	0.8	-		
Gate-Drain ("Miller") Charge	Q _{gd}	-	3.8	-		
Turn-on Delay Time ²	T _{d(ON)}	-	6.2	-	nS	V _{DS} =10V V _{GS} = 5 V R _G = 3 Ω R _L = 1.35 Ω
Rise Time	T _r	-	12.7	-		
Turn-off Delay Time	T _{d(OFF)}	-	51.7	-		
Fall Time	T _f	-	16	-		
Input Capacitance	C _{iss}	-	1160	-	pF	V _{GS} =0V V _{DS} =10V f=1.0MHz
Output Capacitance	C _{oss}	-	187	-		
Reverse Transfer Capacitance	C _{rss}	-	146	-		
Forward Transconductance	G _{fs}	-	29	-	S	V _{DS} = 5V, I _D =7A

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Forward On Voltage ²	V _{SD}	-	-	1.0	V	I _S =1 A, V _{GS} =0V
Reverse Recovery Time ²	T _{rr}	-	17.7	-	nS	I _S =7A, V _{GS} =0V dI/dt=100A/us
Reverse Recovery Charge	Q _{rr}	-	6.7	-	nC	
Continuous Source Current(Body Diode)	I _S	-	-	2.5	A	

- Notes: 1.Pulse width limited by Max. junction temperature.
2.Pulse width ≤300us, dutycycle ≤2%.
3.Surface mounted on 1 in² copper pad of FR4 board.

Characteristics Curve

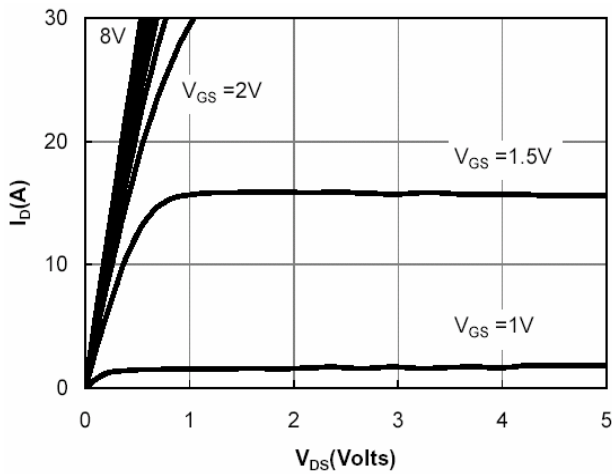


Fig 1. Typical Output Characteristics

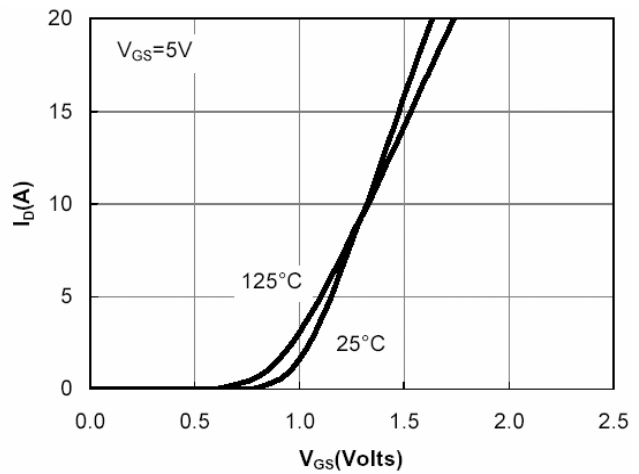


Fig 2. Transfer Characteristics

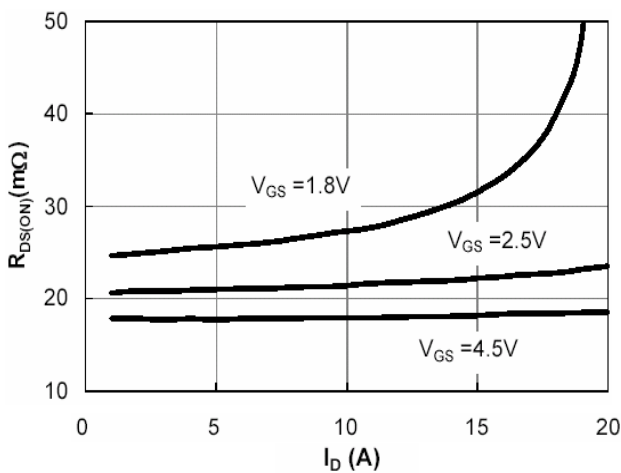


Fig 3. On-Resistance vs. Drain Current and Gate Voltage

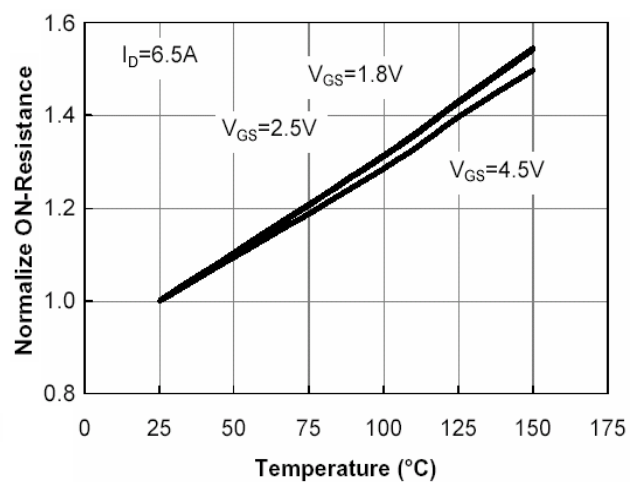


Fig 4. On-Resistance vs. Junction Temperature

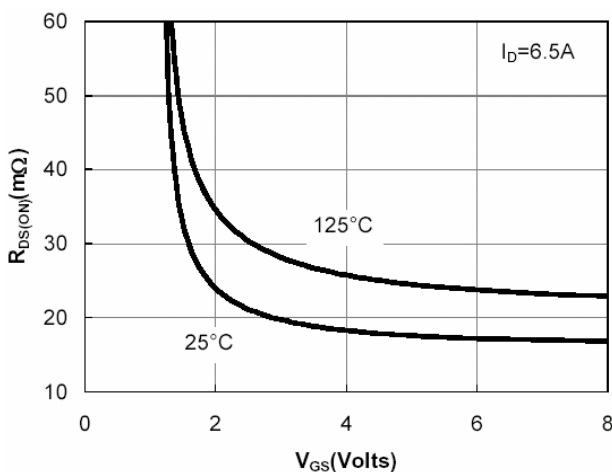


Fig 5. On-Resistance vs. Gate-Source Voltage

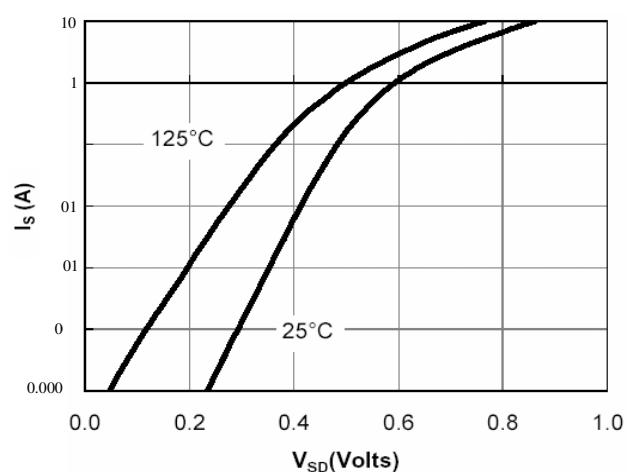


Fig 6. Body Diode Characteristics

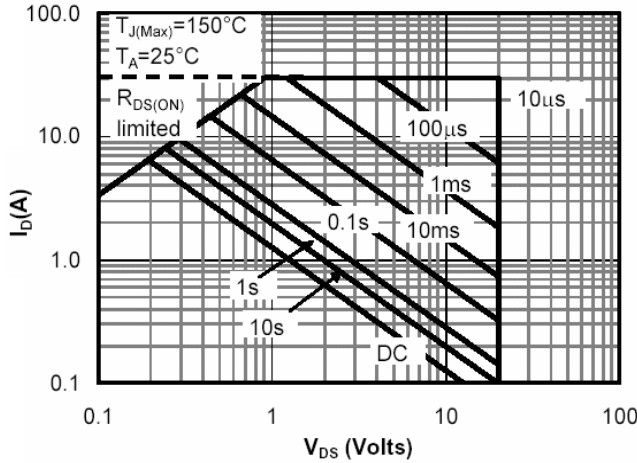


Fig 7. Maximum Safe Operating Area

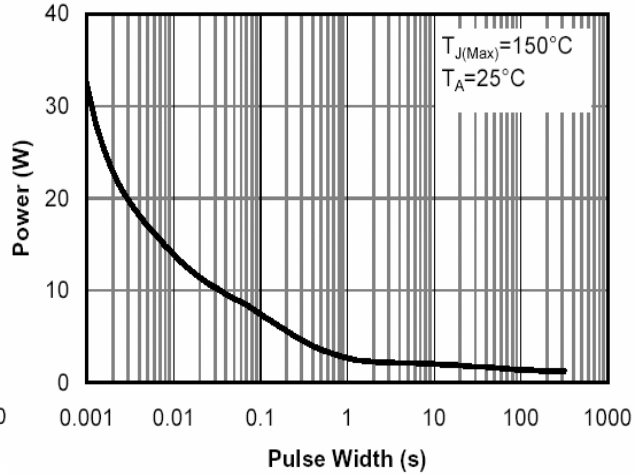


Fig 8. Single Pulse Power Rating Junction-to-Ambient

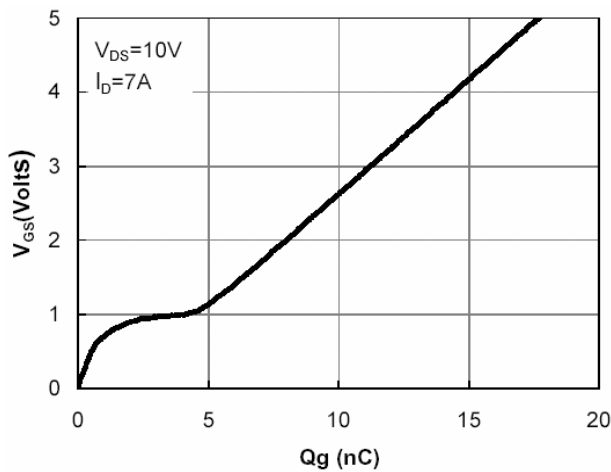


Fig 9. Gate Charge Characteristics

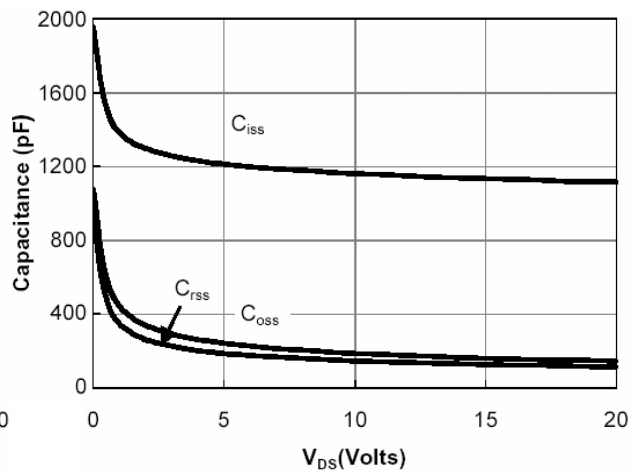


Fig 10. Typical Capacitance Characteristics

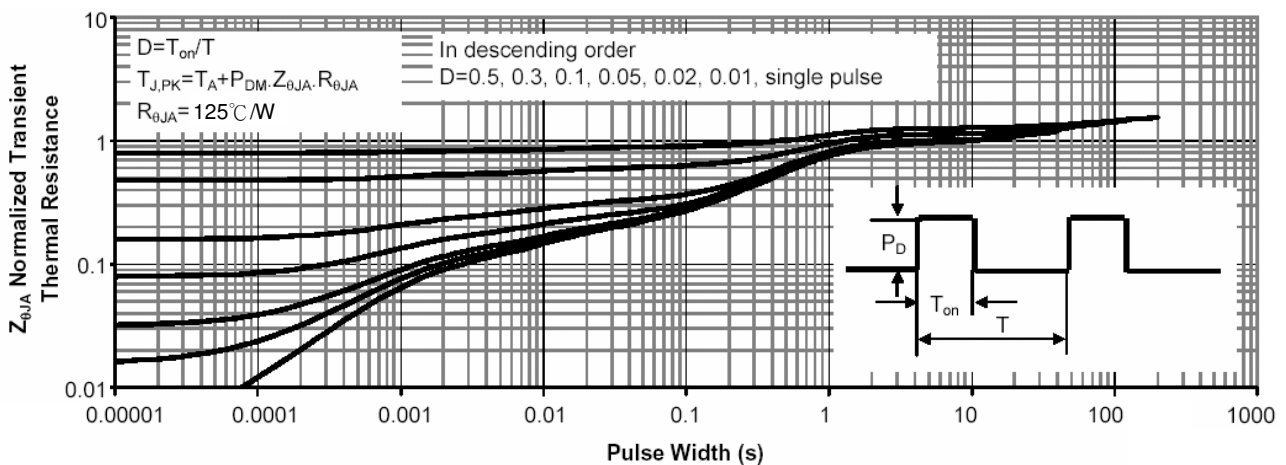


Fig 11. Normalized Maximum Transient Thermal Impedance