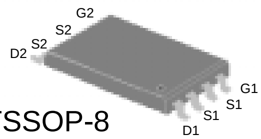
SSM9928(G)EO

DUAL N-CHANNEL ENHANCEMENT-MODE POWER MOSFETS

Low on-resistance
Capable of 2.5V gate drive
Ideal for DC/DC battery applications

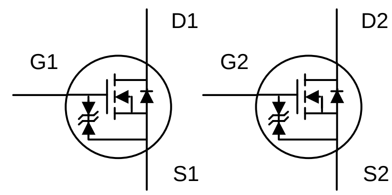


TSSOP-8

BV_{DSS}	20V
$R_{DS(ON)}$	23mΩ
I_D	5A

Description

Power MOSFETs from Silicon Standard provide the designer with the best combination of fast switching, ruggedized device design, ultra low on-resistance and cost-effectiveness.



This device is available with Pb-free lead finish (second-level interconnect) as SSM9928GEO.

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D @ T_A=25°C	Drain Current[3], V_{GS} @ 4.5V	5	A
I_D @ T_A=70°C	Drain Current[3], V_{GS} @ 4.5V	3.5	A
I_{DM}	Pulsed Drain Current[1]	25	A
P_D @ T_A=25°C	Total Power Dissipation	1	W
	Linear Derating Factor	0.008	W/°C
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter		Value	Unit
Rthj-a	Thermal Resistance Junction-ambient[3]	Max.	125	°C/W

Electrical Characteristics @ T_j=25°C (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	20	-	-	V
$\Delta BV_{DSS}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to 25°C, I_D=1mA	-	0.02	-	V/°C
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=4.5V, I_D=5A	-	-	23	mΩ
		V_{GS}=2.5V, I_D=2A	-	-	29	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	0.5	-	-	V
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=5A	-	21	-	S
I_{DSS}	Drain-Source Leakage Current (T_j=25°C)	V_{DS}=20V, V_{GS}=0V	-	-	1	uA
	Drain-Source Leakage Current (T_j=70°C)	V_{DS}=20V ,V_{GS}=0V	-	-	25	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=±12V	-	-	±10	uA
Q_g	Total Gate Charge[2]	I_D=5A	-	15.9	-	nC
Q_{gs}	Gate-Source Charge	V_{DS}=10V	-	1.5	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=4.5V	-	7.4	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=10V	-	6.2	-	ns
t_r	Rise Time	I_D=1A	-	9	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω ,V_{GS}=4.5V	-	30	-	ns
t_f	Fall Time	R_D=10Ω	-	11	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	530	-	pF
C_{oss}	Output Capacitance	V_{DS}=20V	-	245	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	125	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
I_S	Continuous Source Current (Body Diode)	V_D=V_G=0V,V_S=1.2V	-	-	0.83	A
V_{SD}	Forward On Voltage[2]	T_j=25°C,I_S=5A,V_{GS}=0V	-	-	1.2	V

Notes:

1.Pulse width limited by Max. junction temperature.

2.Pulse width ≤300us , duty cycle ≤2%.

3.Surface mounted on 1 in^2 copper pad of FR4 board ; 208°C/W when mounted on Min. copper pad.

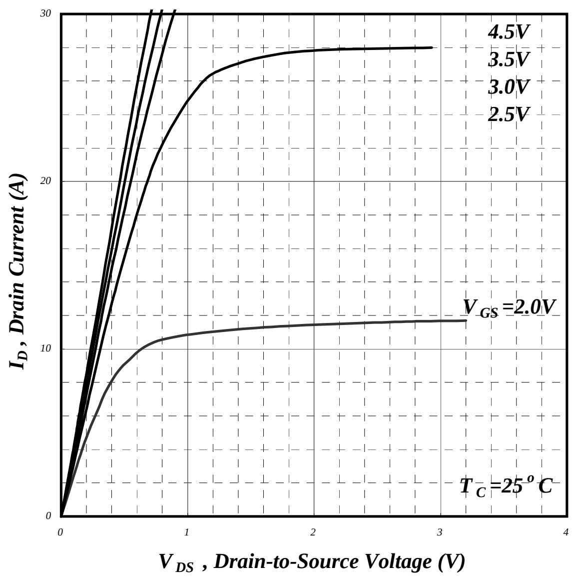


Fig 1. Typical Output Characteristics

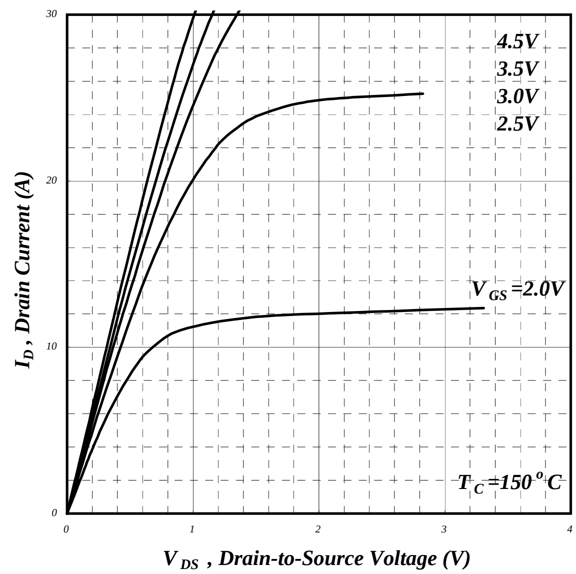


Fig 2. Typical Output Characteristics

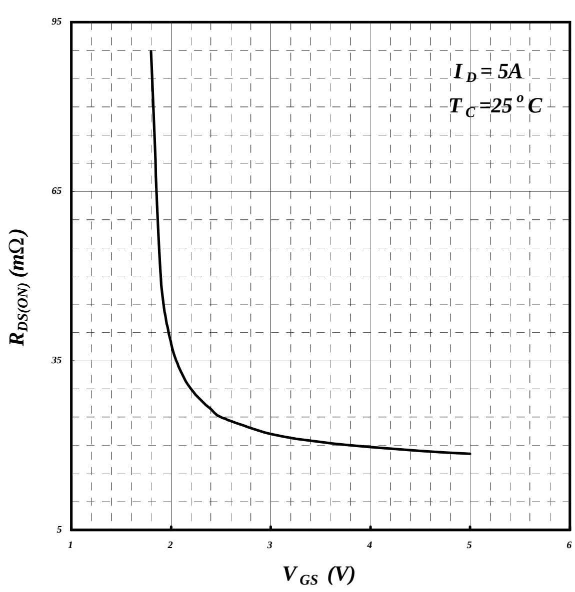


Fig 3. On-Resistance vs. Gate Voltage

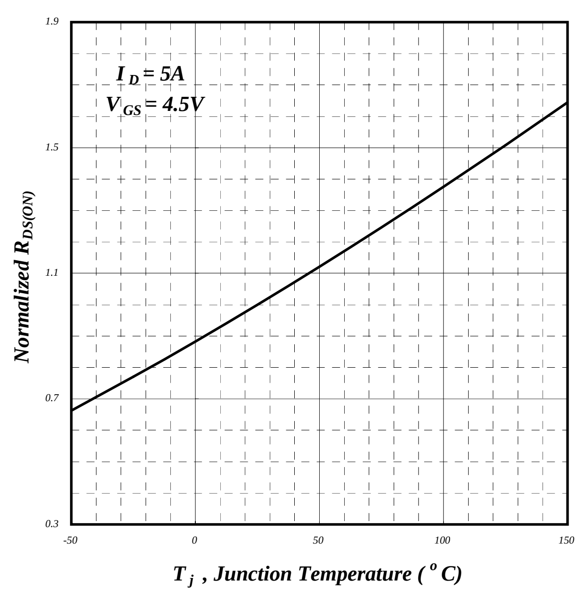


Fig 4. Normalized On-Resistance vs. Junction Temperature

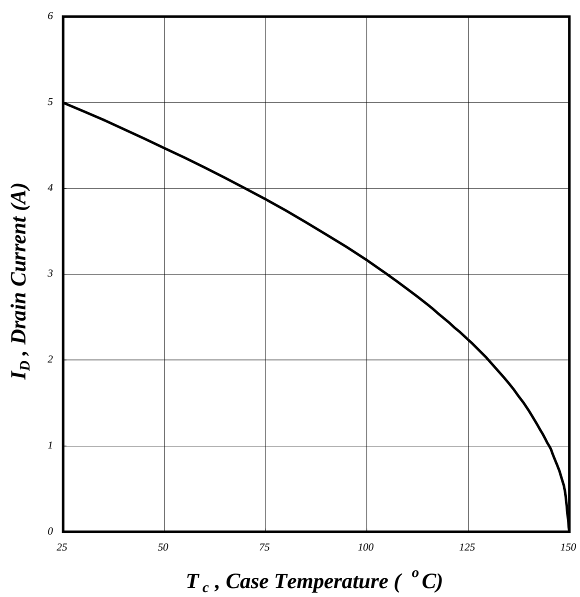


Fig 5. Maximum Drain Current vs. Case Temperature

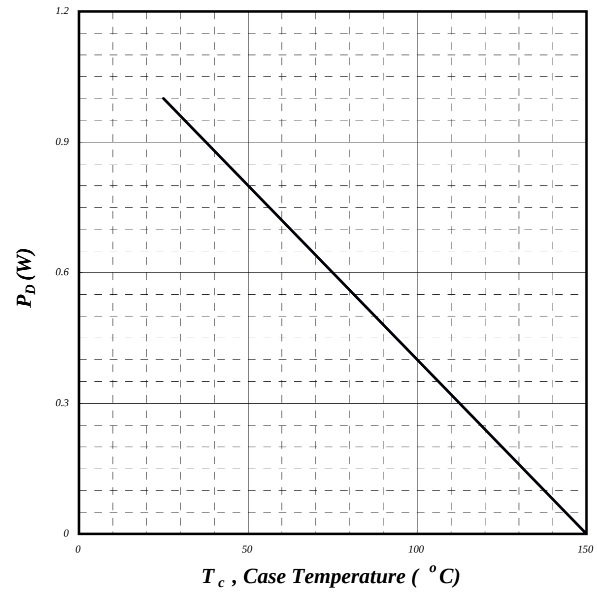


Fig 6. Typical Power Dissipation

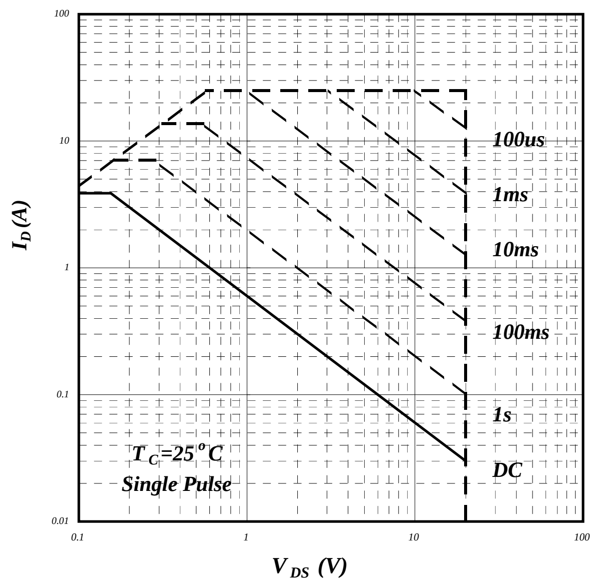


Fig 7. Maximum Safe Operating Area

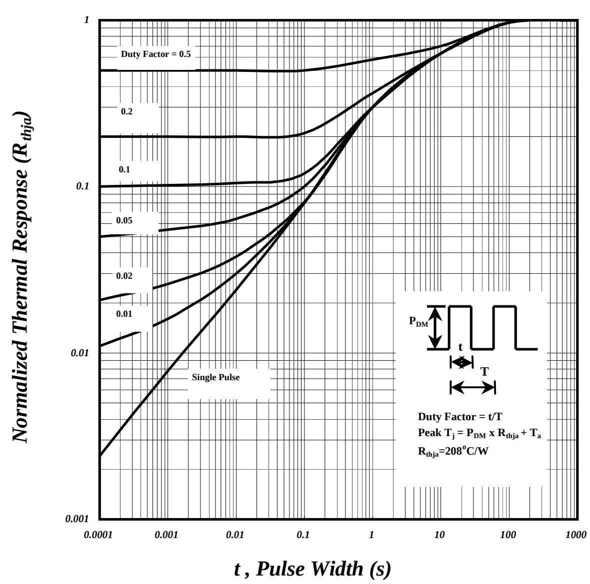


Fig 8. Effective Transient Thermal Impedance

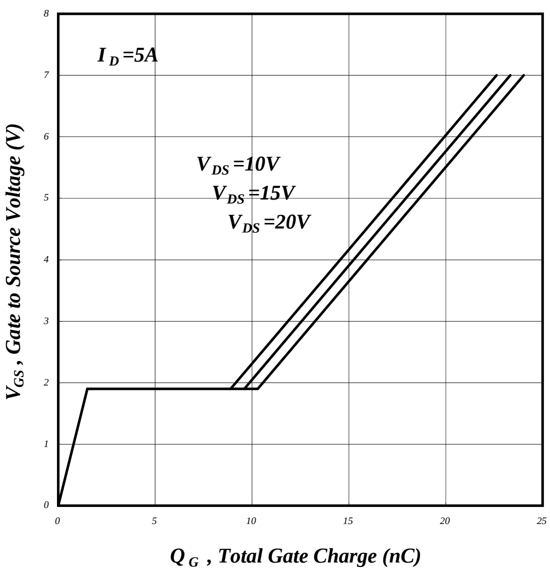


Fig 9. Gate Charge Characteristics

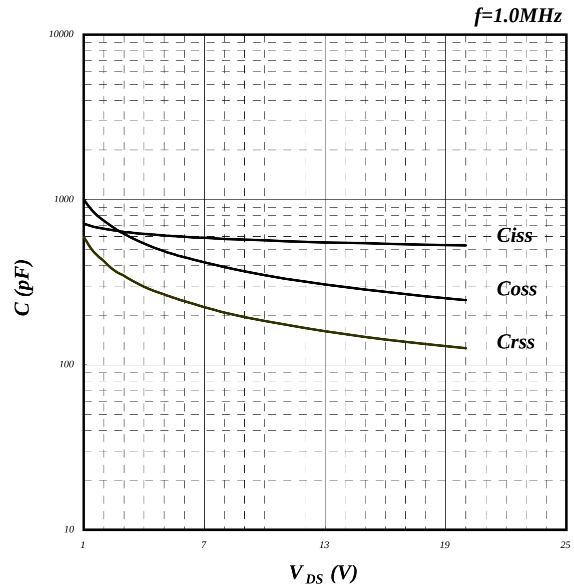


Fig 10. Typical Capacitance Characteristics

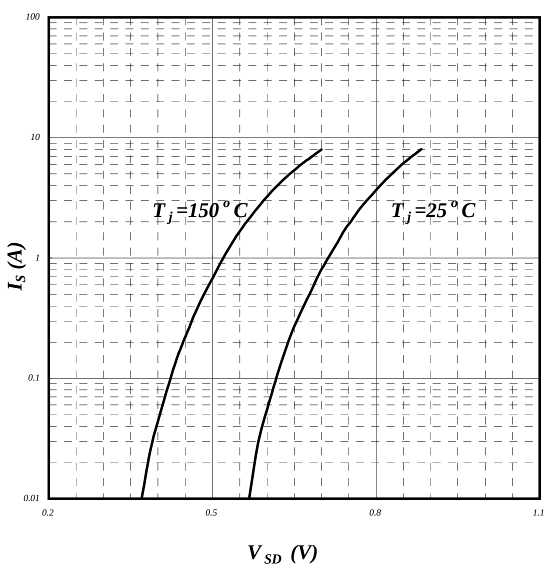


Fig 11. Forward Characteristic of Reverse Diode

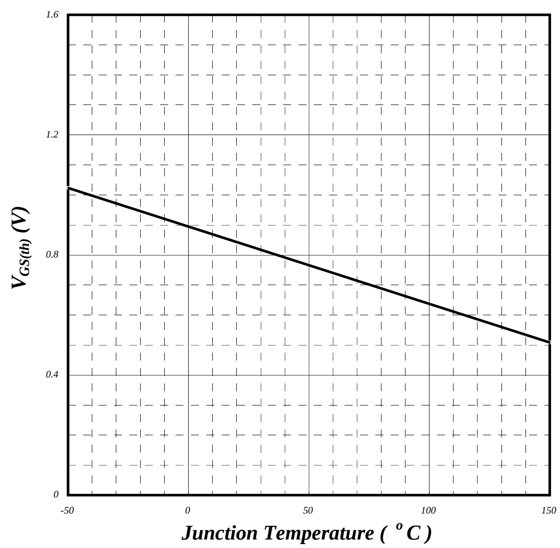
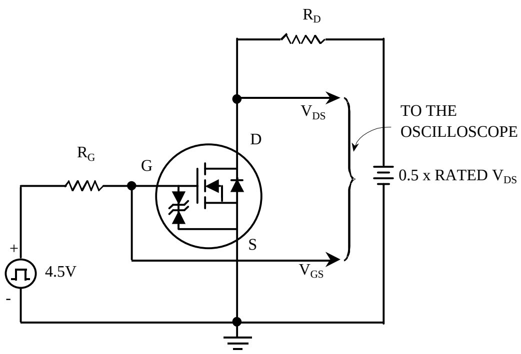


Fig 12. Gate Threshold Voltage vs. Junction Temperature



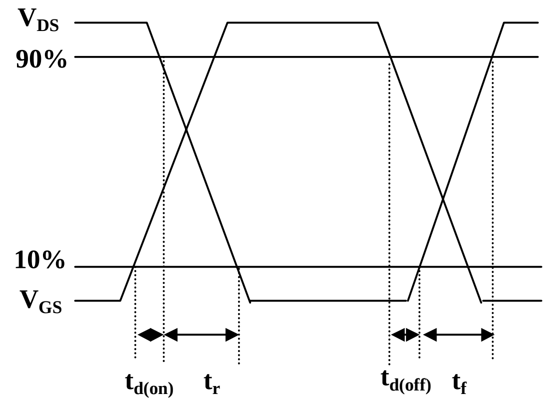
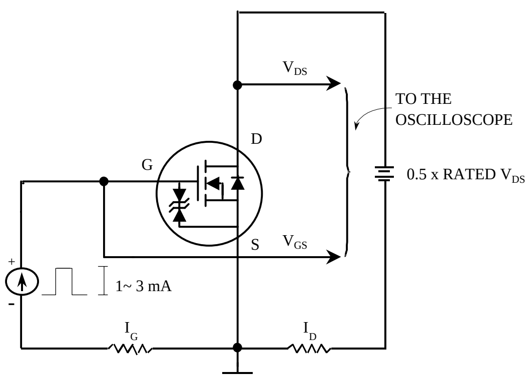


Fig 13. Switching Time Circuit

Fig 14. Switching Time Waveform



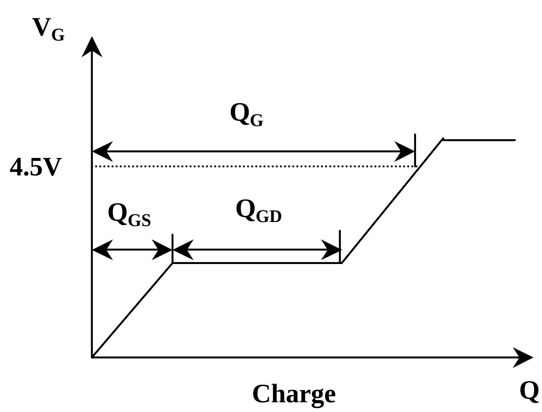


Fig 15. Gate Charge Circuit

Fig 16. Gate Charge Waveform