DESCRIPTION

The AM8958 is the N & P-Channel enhancement mode power field effect transistor using high cell density DMOS trench technology. This high density process is especially tailored to minimize on-state resistance and provide superior switching performance. This device is particularly suited for low voltage application such as notebook computer power management and other battery powered circuits, where high-side switching, low inline power loss and resistance to transient are needed.

The AM8958 is available in SOP8 Package

ORDERING INFORMATION

Package Type	Part Number	
SOP-8	M8	AM8958M8R
		AM8958M8VR
Note	R: Tape & Reel V: Green Package	
AiT provides all Pb free products Suffix " V " means Green Package		

FEATURES

N-Channel

- 30V /6.8A, $R_{DS(ON)}$ = 23mΩ(typ.)@V_{GS} = 10V
- 30V /6.5A, $R_{DS(ON)}$ = 34mΩ(typ.)@V_{GS} = 4.5V

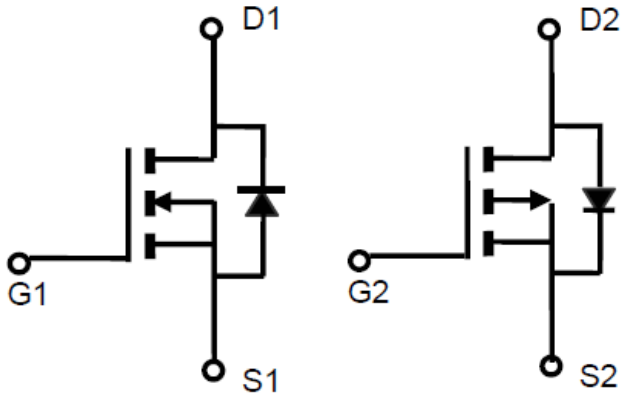
P-Channel

- -30V / -6.5A, $R_{DS(ON)}$ = 35mΩ(typ.)@V_{GS} = -10V
- -30V / -4.4A, $R_{DS(ON)}$ = 60mΩ(typ.)@V_{GS} = -4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and Maximum DC current capability
- Available in SOP8 Package

APPLICATION

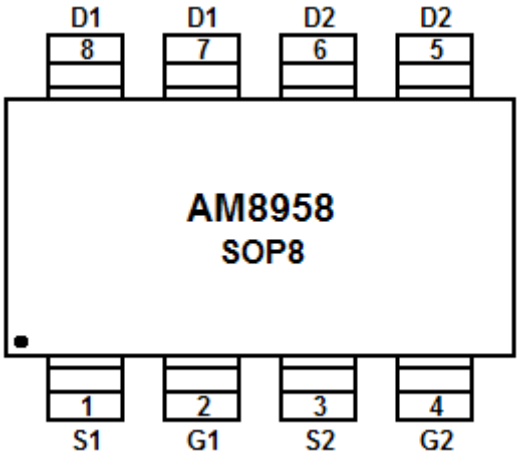
- Power Management in Note book
- Portable Equipment
- Battery Powered System

P-CHANNEL MOSFET



N-Channle P-Channle

PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	S1	Source1
2	G1	Gate1
3	S2	Source2
4	G2	Gate2
5	D2	Drain2
6	D2	Drain2
7	D1	Drain1
8	D1	Drain1

ABSOLUTE MAXIMUM RATINGS

T_A = 25℃ Unless otherwise specified

Symbol	Parameter		Typical		Unit
			N	P	
V_{DSS}	Drain-Source Voltage		30	-30	V
V_{GSS}	Gate-Source Voltage		±20	±20	V
I_D	Continuous Drain Current (T_J=150℃)	T_A=25°C	6.8	-6.5	A
I_{DM}	Pulsed Drain Current		25	-25	A
I_S	Continuous Source Current (Diode Conduction)		2.3	-2.3	A
P_D	Power Dissipation				
	T_A=25°C		2.5	2.8	W
	T_A=70°C		1.6	1.8	W
T_J	Operation Junction Temperature		150		℃
T_{STG}	Storage Temperature Range		-55~150		℃

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

THERMAL INFORMATION

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	50	-	80	℃/W

ELECTRICAL CHARACTERISTICS

T_A = 25℃ Unless otherwise specified

Parameter	Symbol	Conditions		Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250μA	N	30	-	-	V
		V_{GS}=0V,I_D=-250μA	P	-30	-	-	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	N	1.0	-	-2.5	V
			P	-1.0	-	-2.5	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V	N	-	-	±100	nA
			P	-	-	±100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V,V_{GS}=0V	N	-	-	1	μA
		V_{DS}=-24V,V_{GS}=0V	P	-	-	-1	
		V_{DS}=24V,V_{GS}=0V T_J=80°C	N	-	-	30	
		V_{DS}=-24V,V_{GS}=0V T_J=80°C	P	-	-	-30	
On-State Drain Current	$I_{D(ON)}$	V_{DS}≧5V ,V_{GS}=10V	N	30	-	-	A
		V_{DS}≦-5V ,V_{GS}=-10V	P	-30	-	-	
Drain-source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V,I_D=6.8A	N	-	23	30	mΩ
		V_{GS}=-10V,I_D=-6.5A	P	-	35	50	
		V_{GS}=4.5V,I_D=6.5A	N	-	34	42	
		V_{GS}=-4.5V,I_D=-5A	P	-	60	85	
Source-Drain Doide							
Diode Forward Voltage	V_{SD}	I_S=1.7A,V_{GS}=0V	N	-	0.7	1.2	V
		I_S=-1.7A,V_{GS}=0V	P	-	-0.7	-1.2	
Dynamic Parameters							
Total Gate Charge	Q_g	N-Channel V_{DS}=15V, V_{GS}=10V I_D=6.0A P-Channel V_{DS}=-15V, V_{GS}=-10V I_D=-5.0A	N	-	13	20	nC
			P	-	15	25	
Gate-Source Charge	Q_{GS}		N	-	2.3	-	
			P	-	4.0	-	
Gate-Drain Charge	Q_{GD}		N	-	2.0	-	
			P	-	2.0	-	
Turn-On Time	$t_{d(on)}$	N-Channel V_{DD}=15V, R_L=150Ω I_D=1.0A, V_{GEN}=10V R_G=6Ω P-Channel V_{DD}=-15V, R_L=150Ω I_D=-1.0A, V_{GEN}=-10V R_G=6Ω	N	-	6.0	12	nS
			P	-	7.0	15	
	T_r		N	-	14	25	
			P	-	10	20	
Turn-Off Time	$t_{d(off)}$		N	-	30	60	
			P	-	40	80	
	T_f		N	-	5	10	
			P	-	20	40	

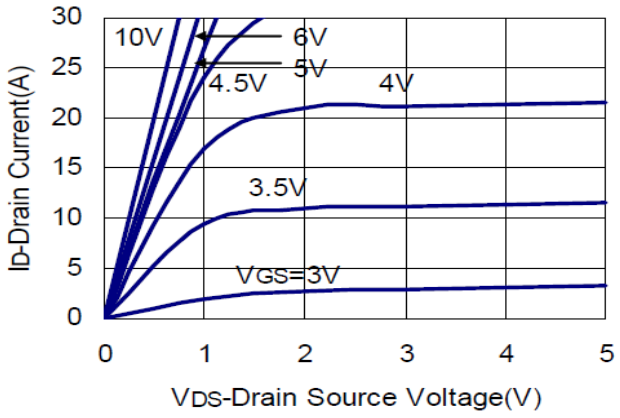
NOTE: 1. Pulse test: pulse width <= 300us, duty cycle<= 2%

2. Static parameters are based on package level with recommended wire-bonding

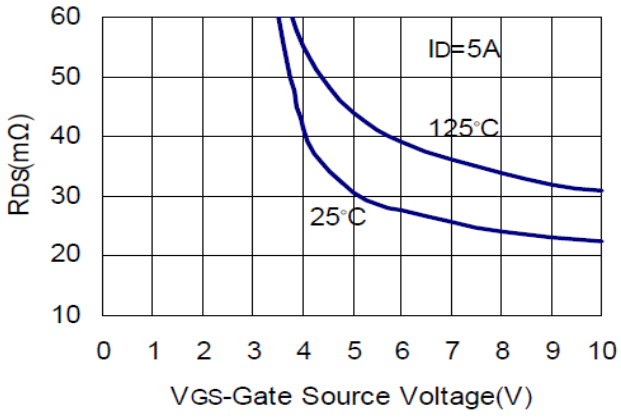
TYPICAL CHARACTERISTICS

N-Channel

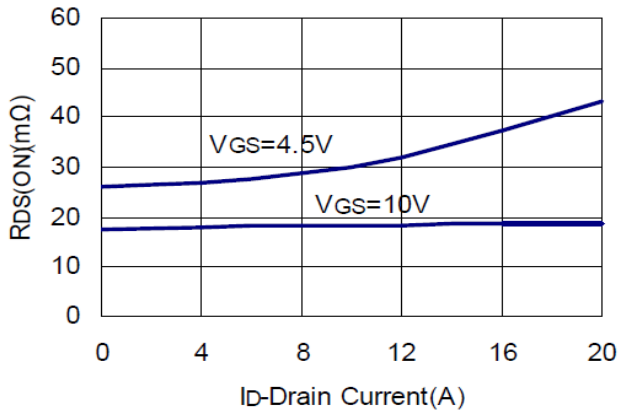
1. Output Characteristics



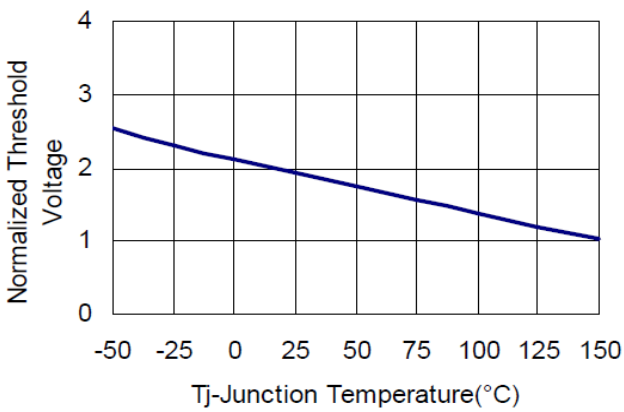
2. Drain Source On Resistance



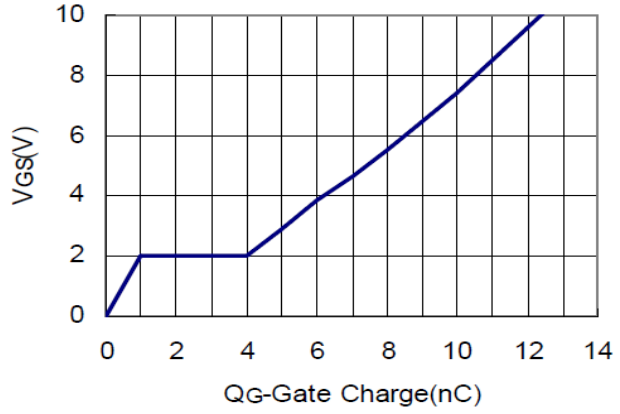
3. Drain Source On Resistance



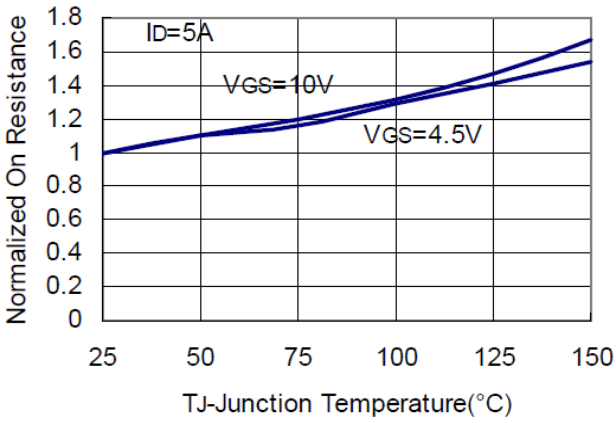
4. Gate Threshold Voltage



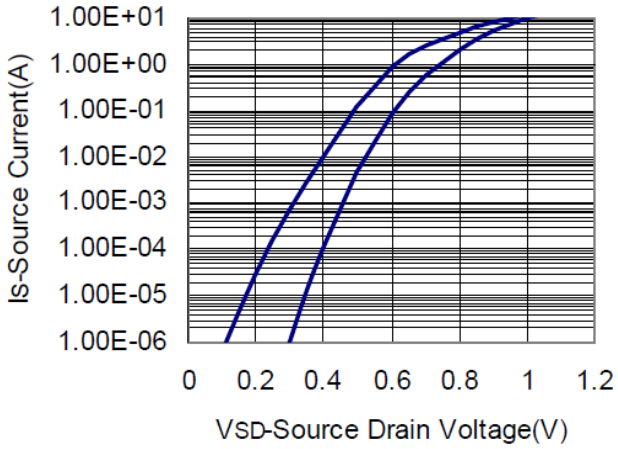
5. Gate Charge



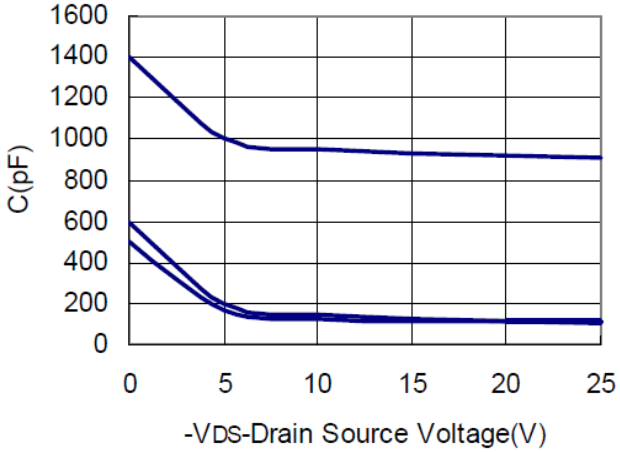
6. Drain Source On Resistance



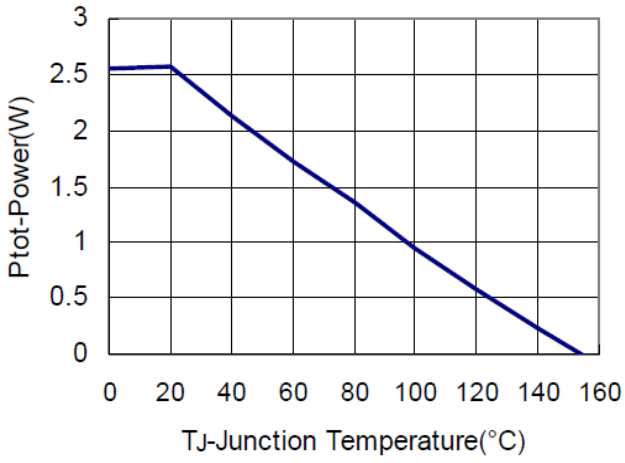
7. Source Drain Diode Forward



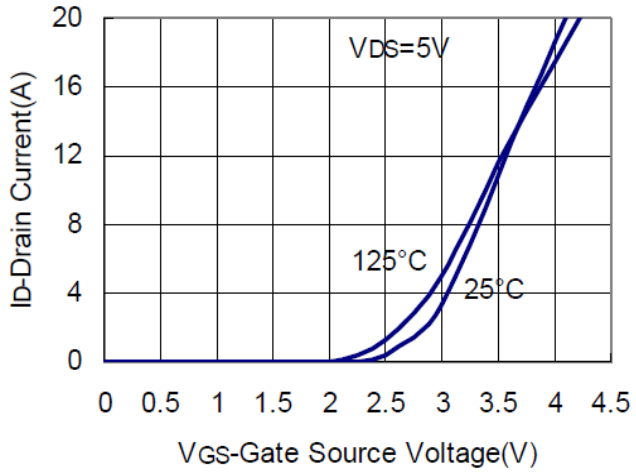
8. Capacitance



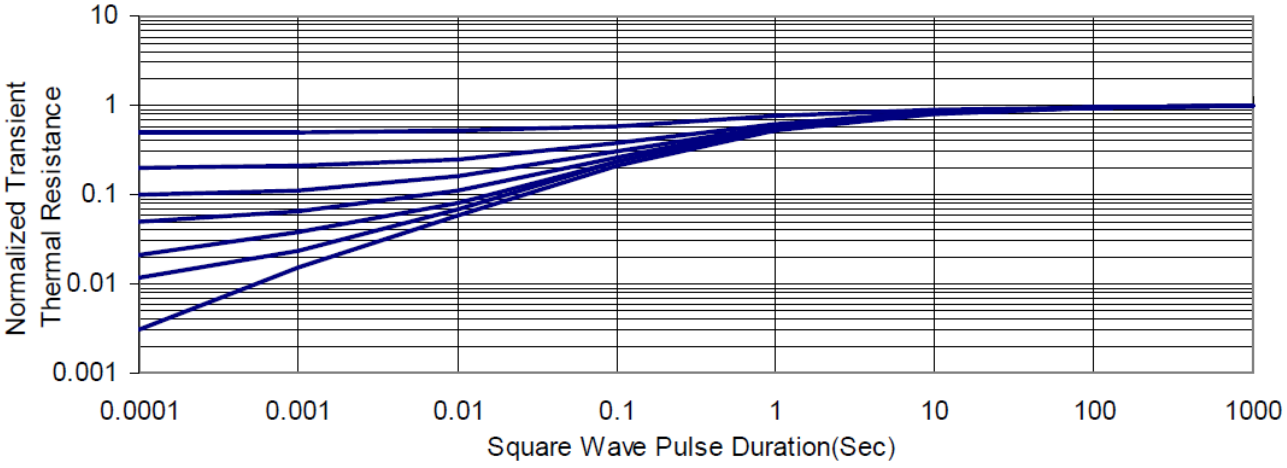
9. Power Dissipation



10. Drain Current

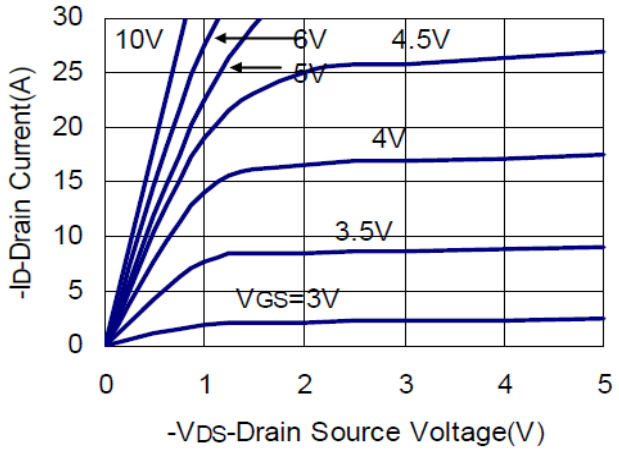


11. Thermal Transient Impedance

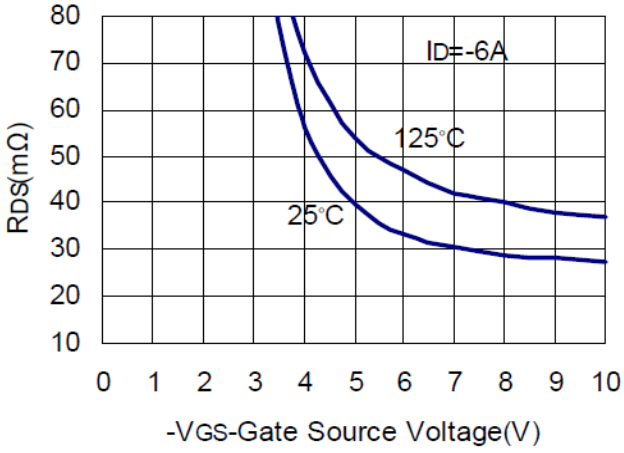


P-Channel

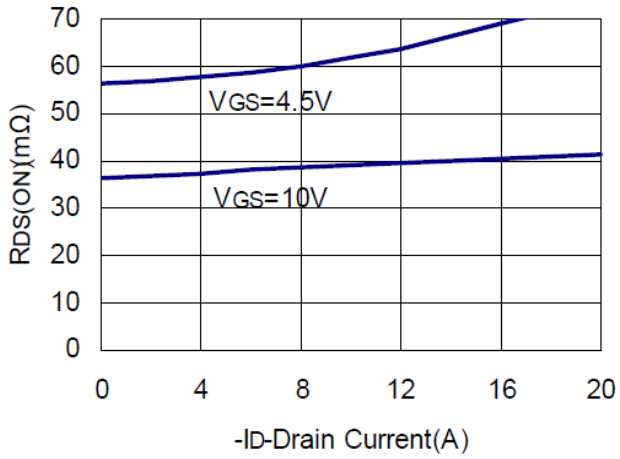
12. Output Characteristics



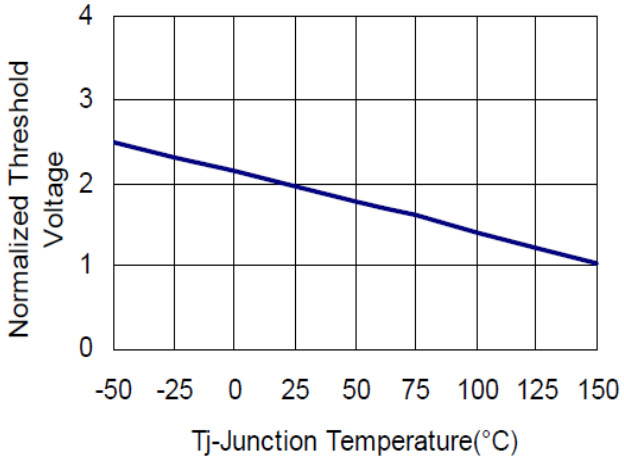
13. Drain Source On Resistance



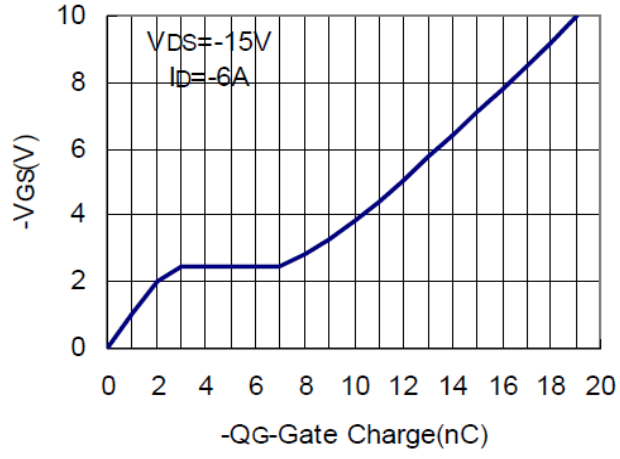
14. Drain Source On Resistance



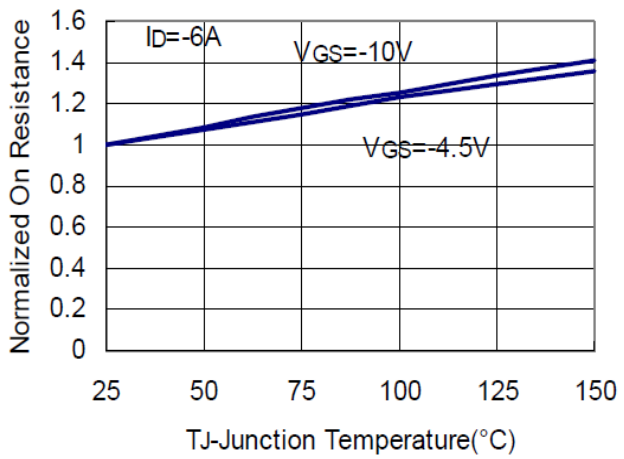
15. Gate Threshold Voltage



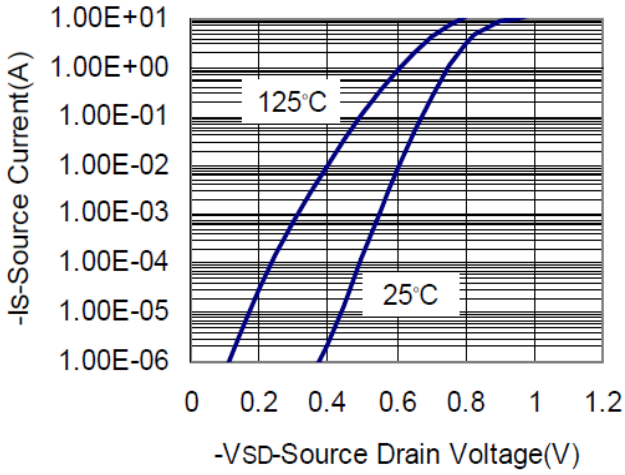
16. Gate Charge



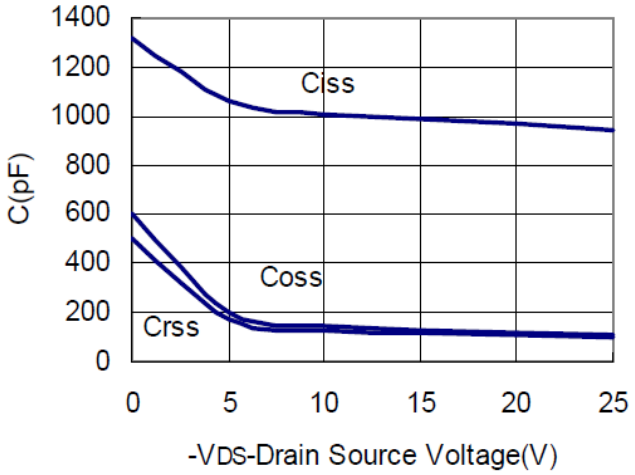
17. Drain Source On Resistance



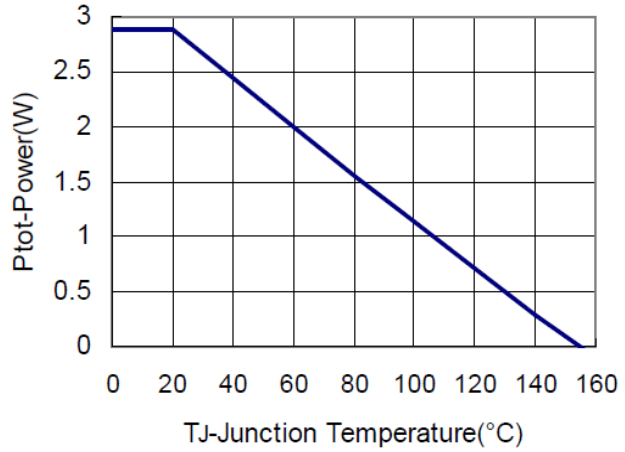
18. Source Drain Diode Forward



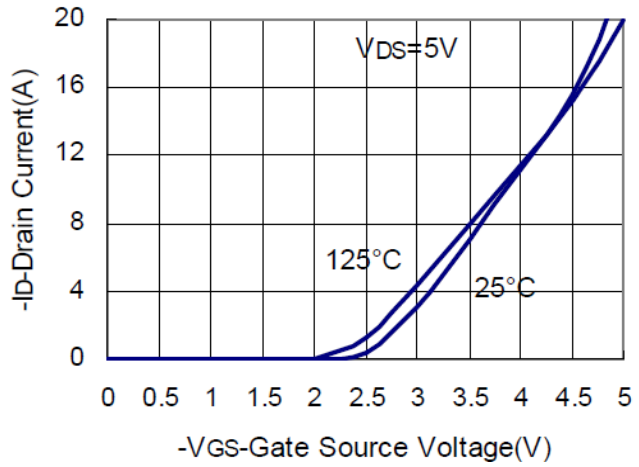
19. Capacitance



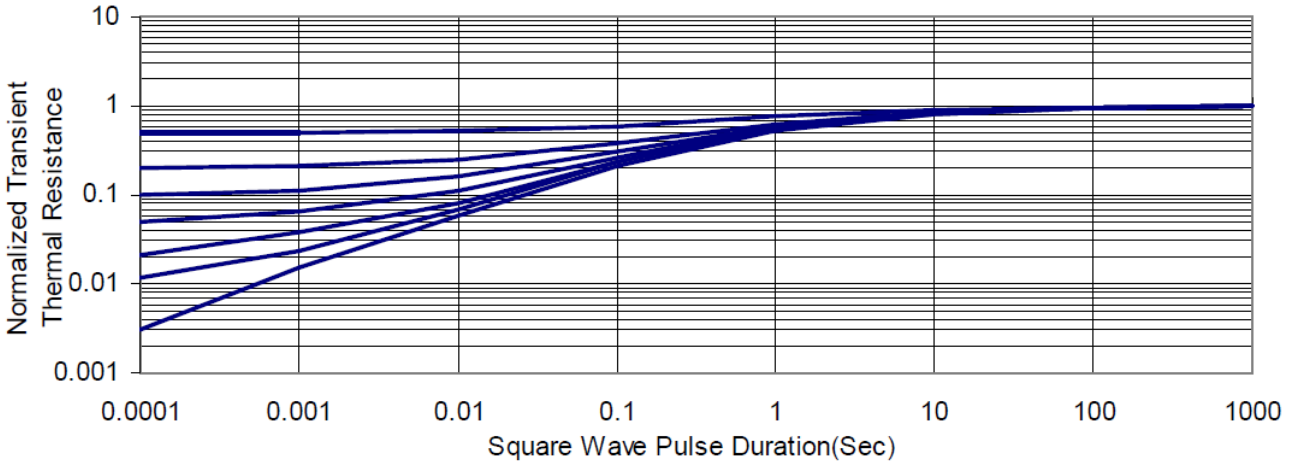
20. Power Dissipation



21. Drain Current

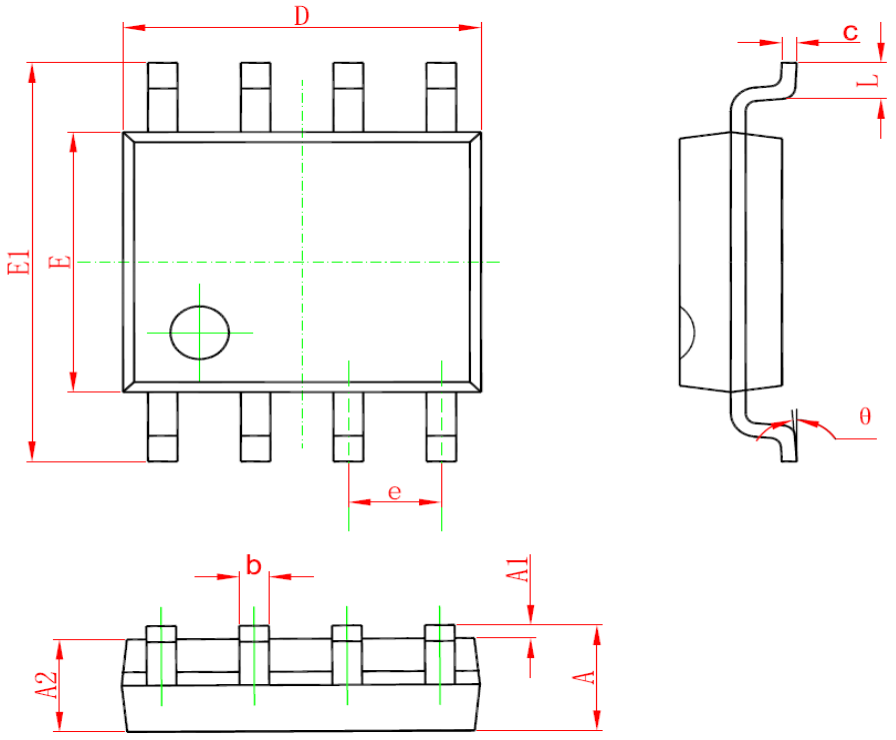


22. Thermal Transient Impedance



PACKAGE INFORMATION

Dimension in SOP-8 (Unit: mm)



Symbol	Min	Max
A	1.350	1.750
A1	0.100	0.250
A2	1.350	1.550
b	0.330	0.510
c	0.170	0.250
D	4.700	5.100
E	3.800	4.000
E1	5.800	6.200
e	1.270(BSC)	
L	0.400	1.270
θ	0°	8°

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