



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

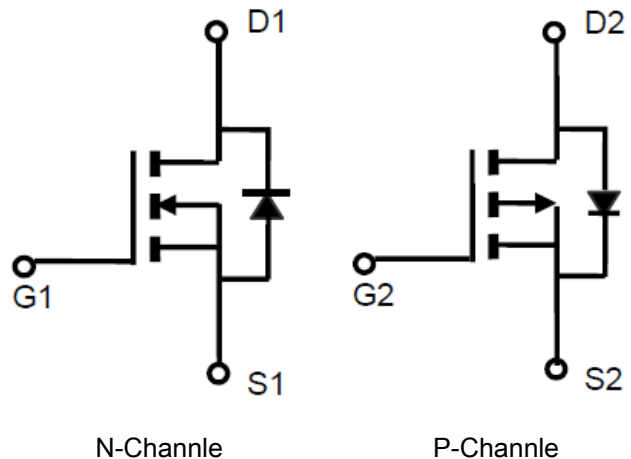
P-Channel

- -30V / -6.5A, $R_{DS(ON)} = 35m\Omega$ (typ.)@ $V_{GS} = -10V$
- -30V / -4.4A, $R_{DS(ON)} = 60m\Omega$ (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

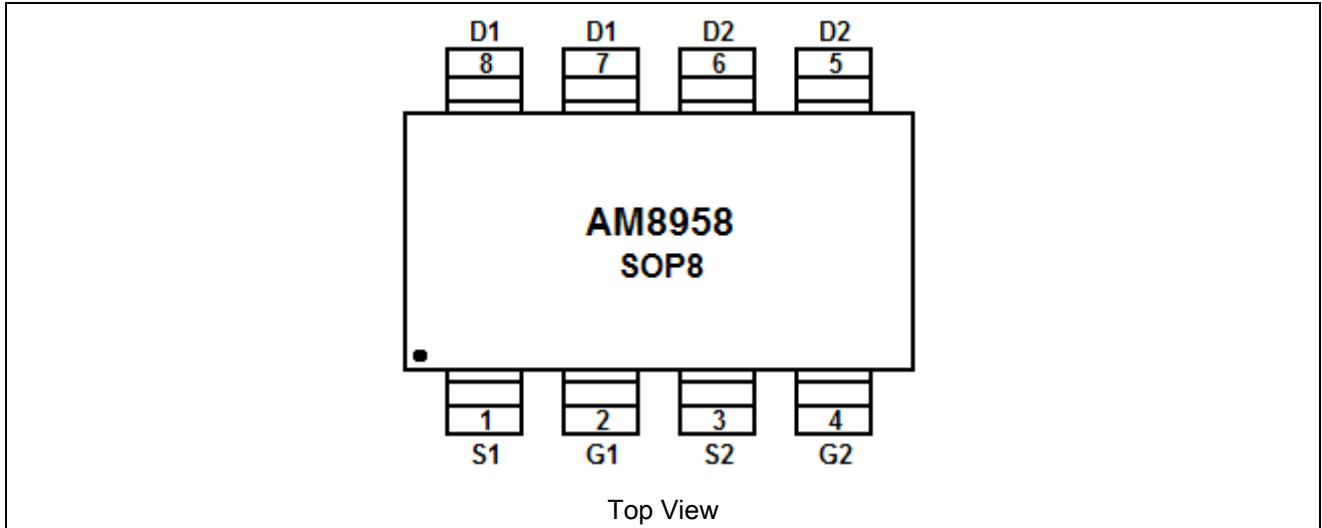
- Power Management in Note book
- Portable Equipment
- Battery Powered System

P-CHANNEL MOSFET





PIN DESCRIPTION



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°C 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°C)	T _A =25°C		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		°C
T _{STG}	Storage Temperature Range	-55~150		°C

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 _{θJA}	50	-	80	°C/W



ELECTRICAL CHARACTERISTICS

T_A = 25°C 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 Diode							
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	N	-	13	20	nC
			P	-	15	25	
Gate-Source Charge	Q _{GS}	I _D =6.0A P-Channel	N	-	2.3	-	
			P	-	4.0	-	
Gate-Drain Charge	Q _{GD}	V _{DS} =-15V, V _{GS} =-10V I _D =-5.0A	N	-	2.0	-	
			P	-	2.0	-	
Turn-On Time	t _{d(on)}	N-Channel V _{DD} =15V, R _L =150Ω	N	-	6.0	12	nS
			P	-	7.0	15	
	T _r	I _D =1.0A, V _{GEN} =10V R _G =6Ω	N	-	14	25	
			P	-	10	20	
Turn-Off Time	t _{d(off)}	P-Channel V _{DD} =-15V, R _L =150Ω	N	-	30	60	
			P	-	40	80	
	T _f	I _D =-1.0A, V _{GEN} =-10V R _G =6Ω	N	-	5	10	
			P	-	20	40	

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

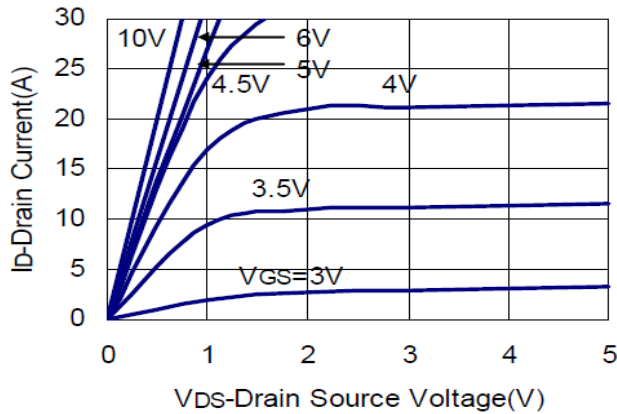
2. Static parameters are based on package level with recommended wire-bonding



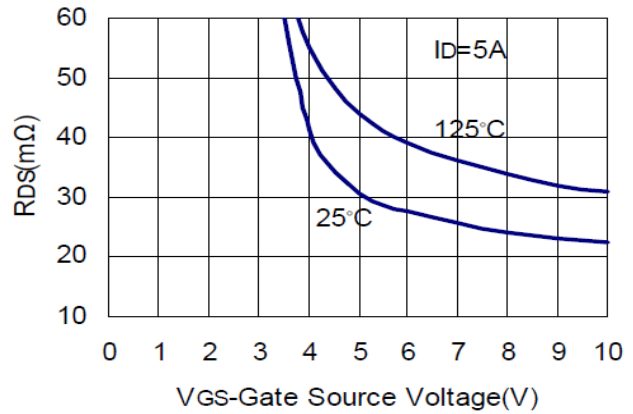
TYPICAL CHARACTERISTICS

N-Channel

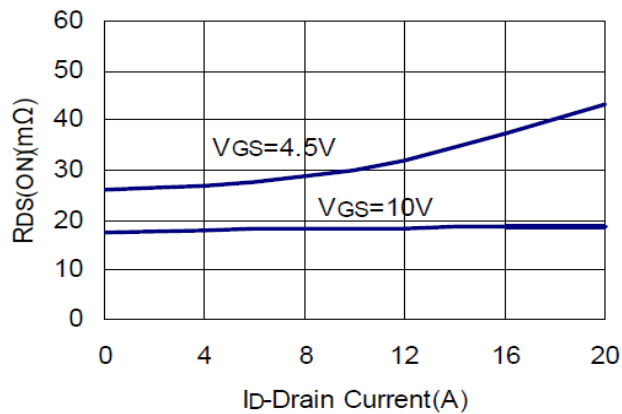
1. Output Characteristics



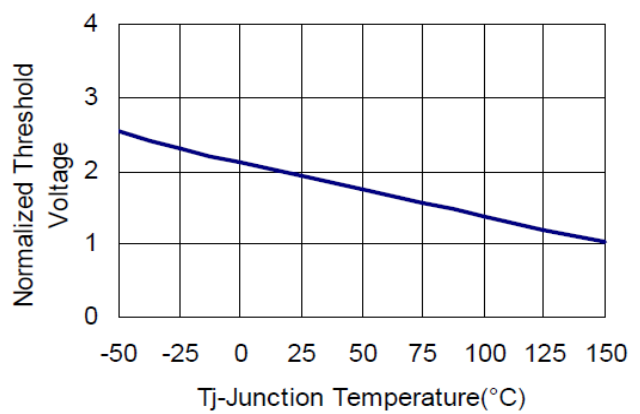
2. Drain Source On Resistance



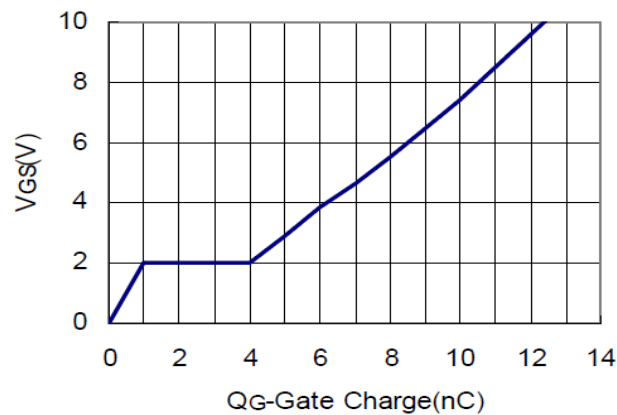
3. Drain Source On Resistance



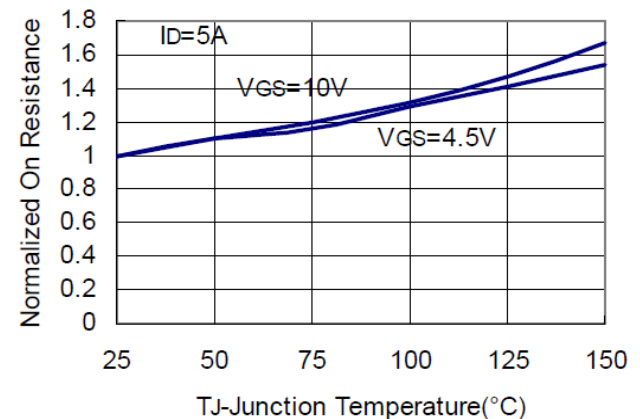
4. Gate Threshold Voltage



5. Gate Charge

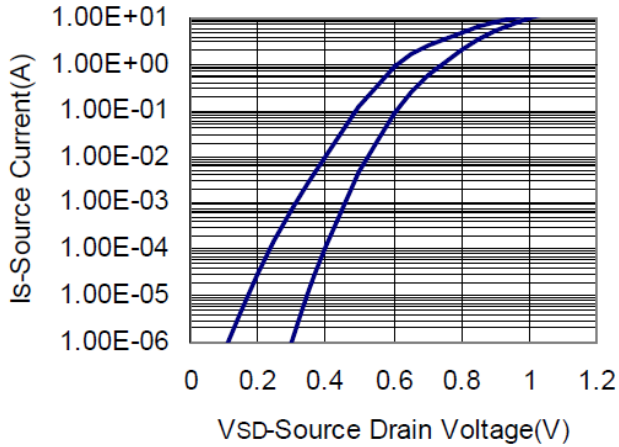


6. Drain Source On Resistance

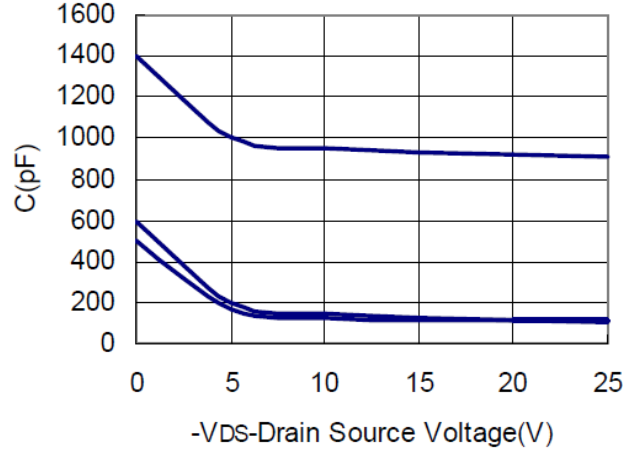




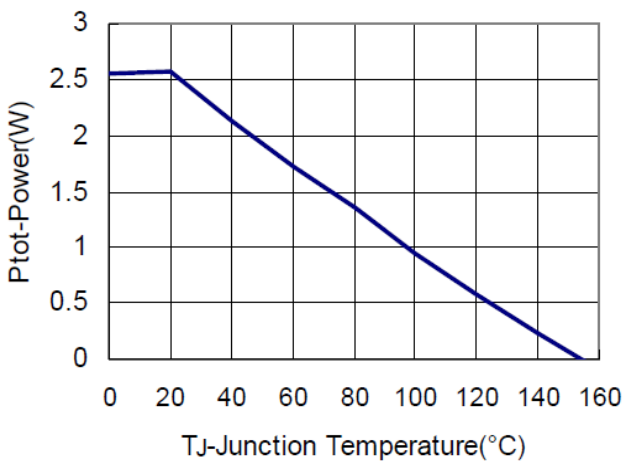
7. Source Drain Diode Forward



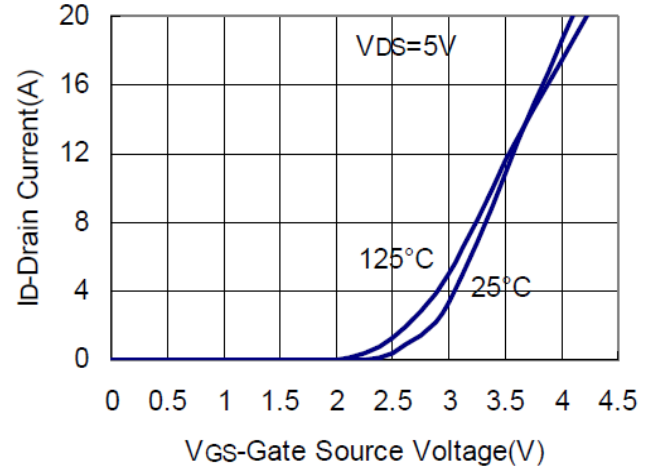
8. Capacitance



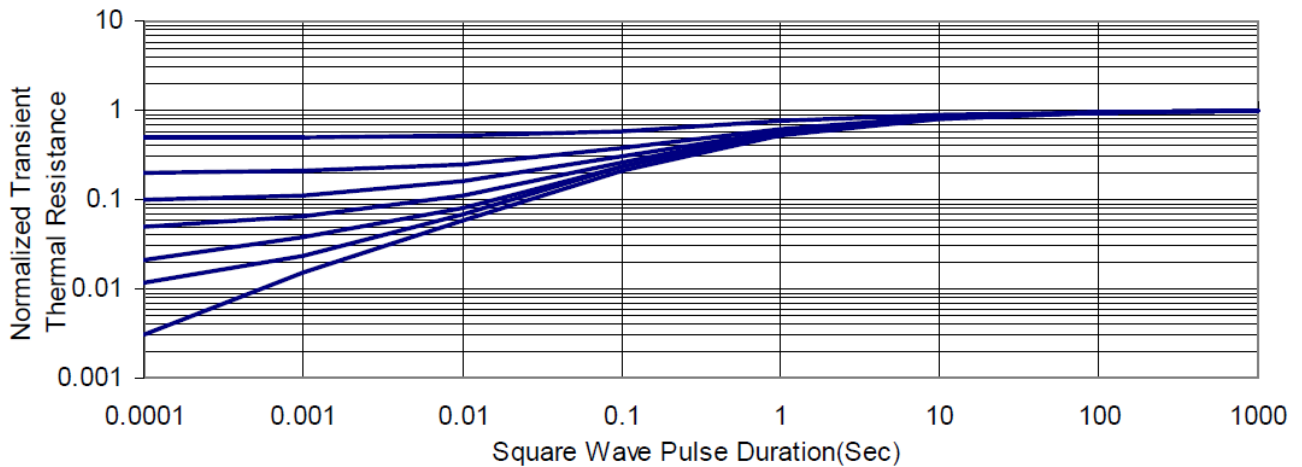
9. Power Dissipation



10. Drain Current



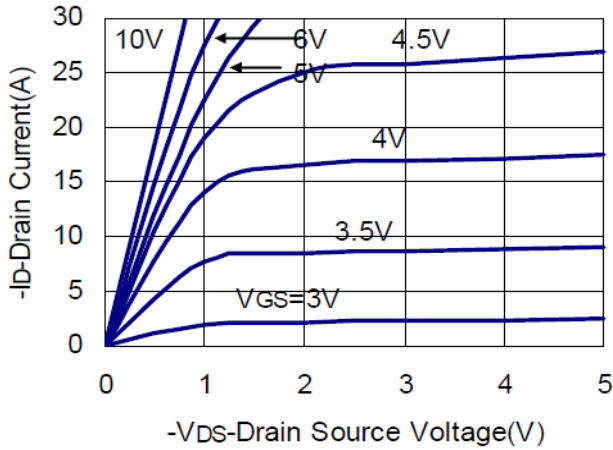
11. Thermal Transient Impedance



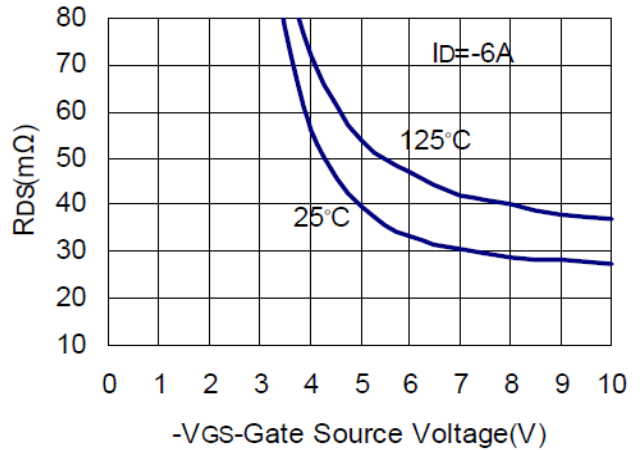


P-Channel

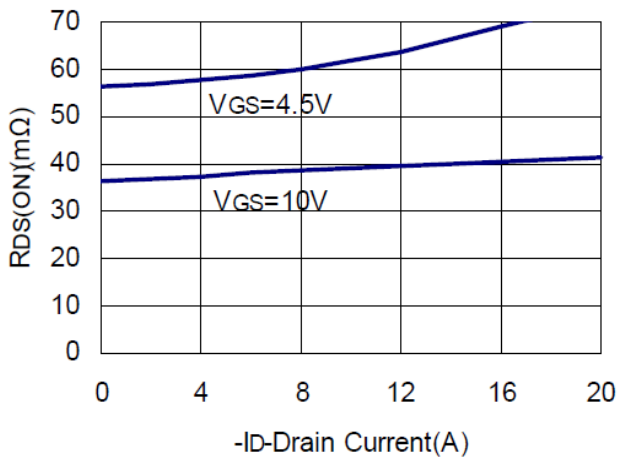
12. Output Characteristics



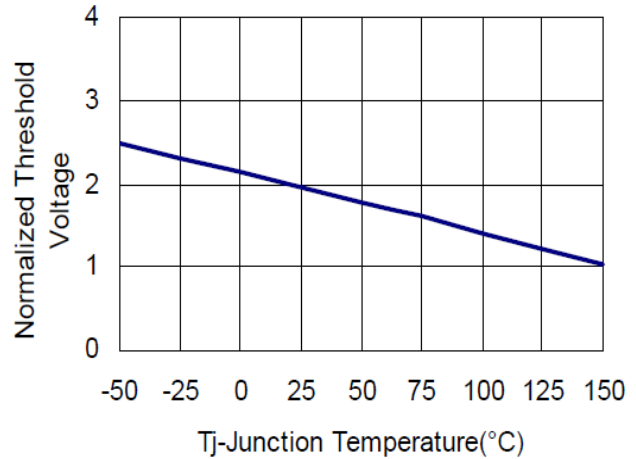
13. Drain Source On Resistance



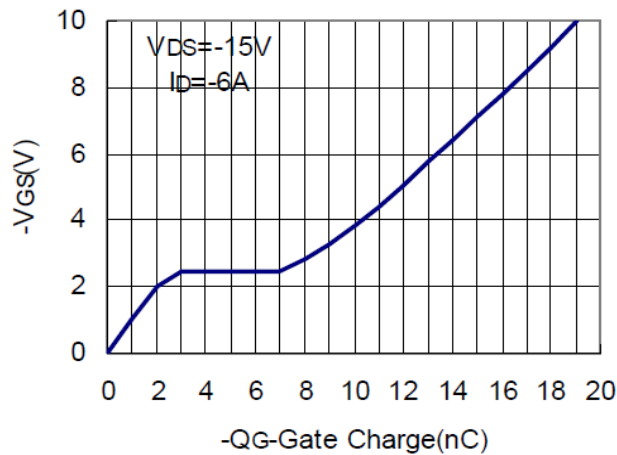
14. Drain Source On Resistance



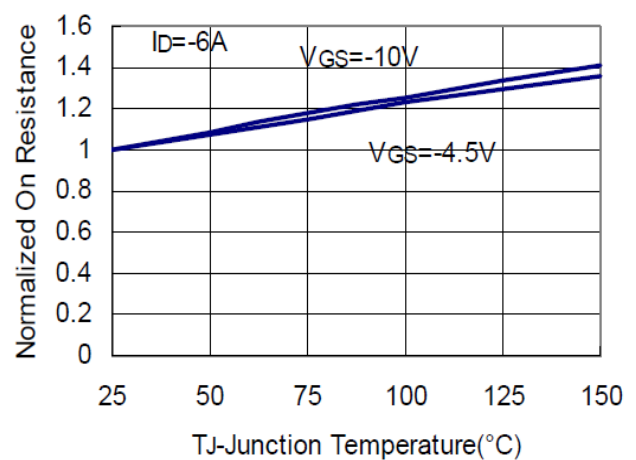
15. Gate Threshold Voltage



16. Gate Charge

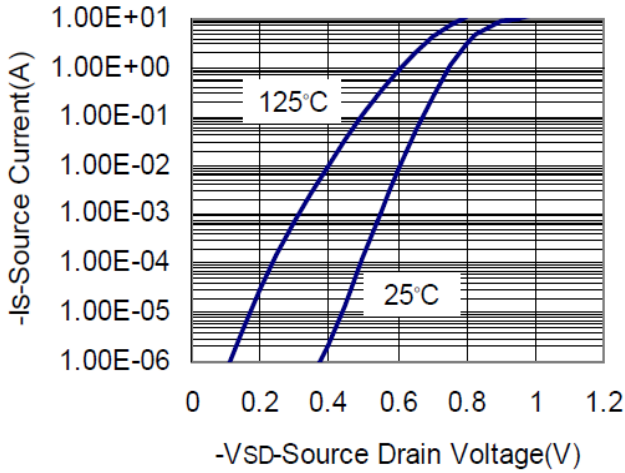


17. Drain Source On Resistance

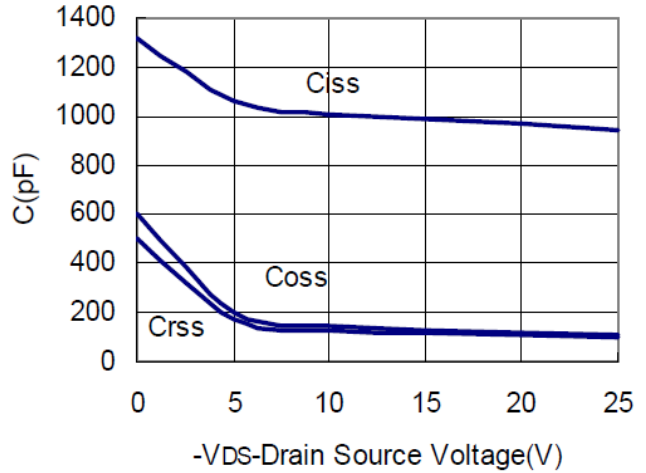




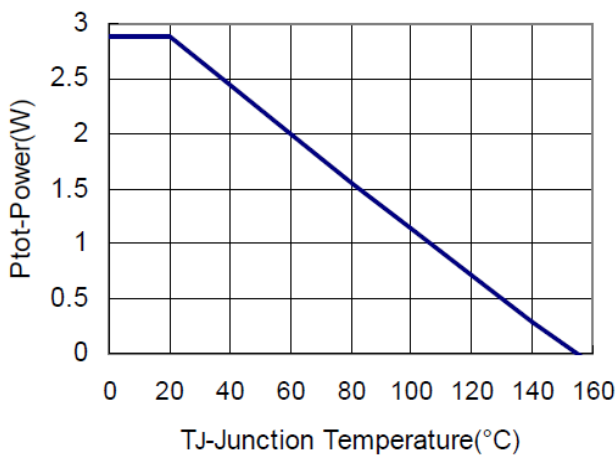
18. Source Drain Diode Forward



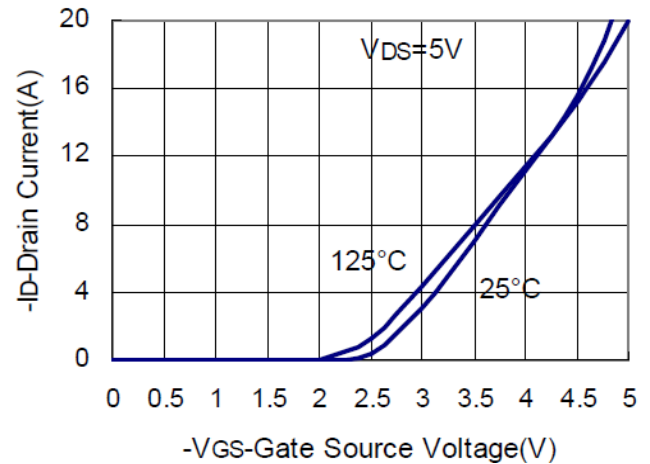
19. Capacitance



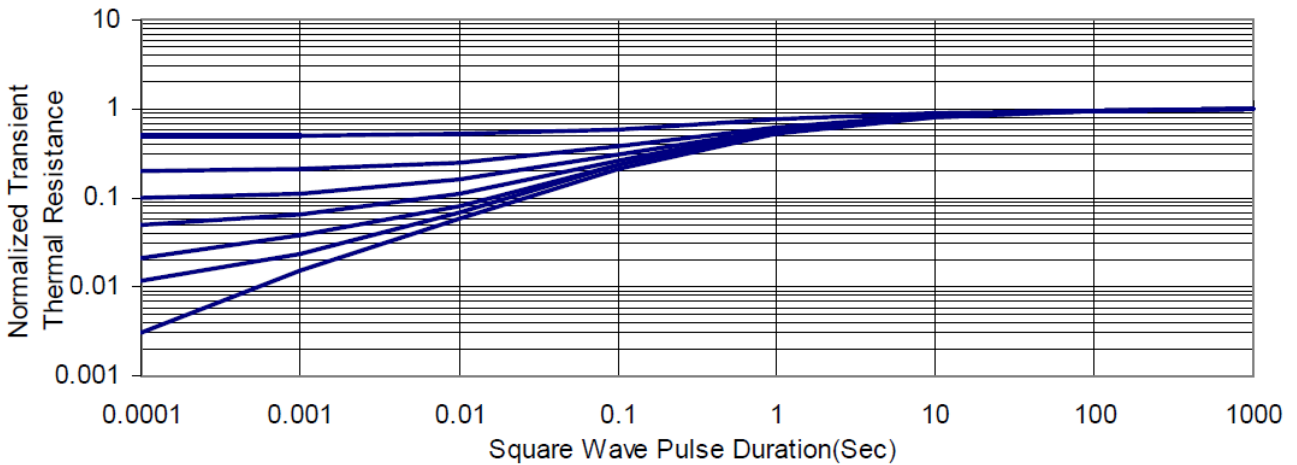
20. Power Dissipation



21. Drain Current



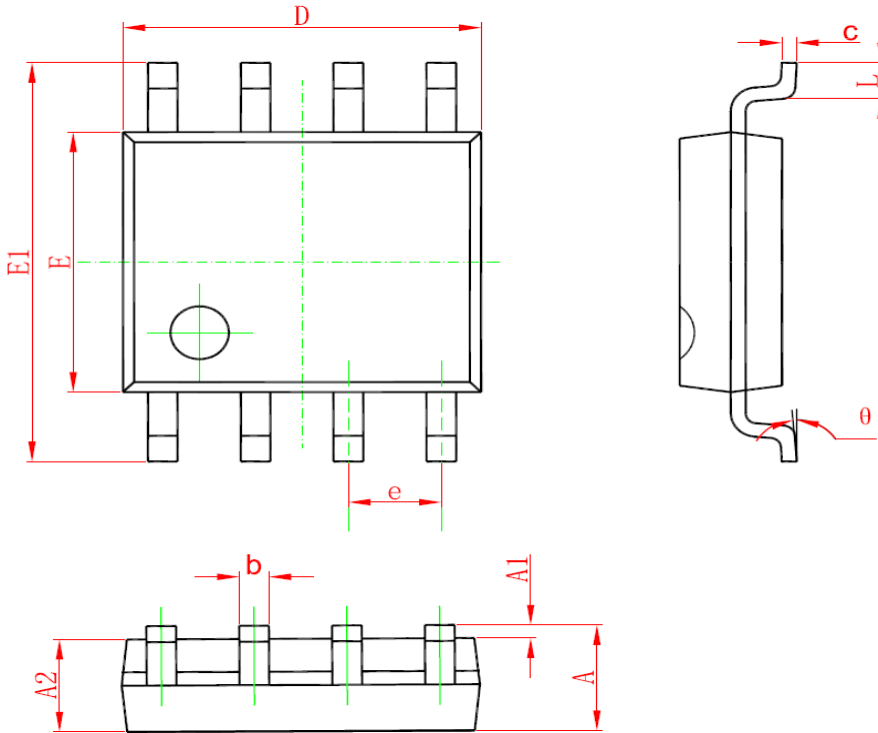
22. Thermal Transient Impedance





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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