DESCRIPTION

The AM4614 is available in SOP8 package.

PACKAGE	CH	BVDSS	RDSON	ID
SOP8	N	40V	26mΩ	7.2A
	P	-40V	38mΩ	-7.5A

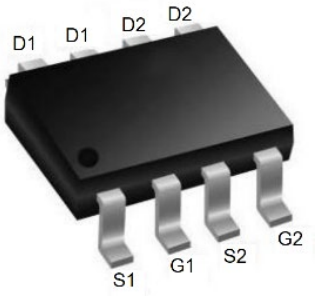
FEATURE

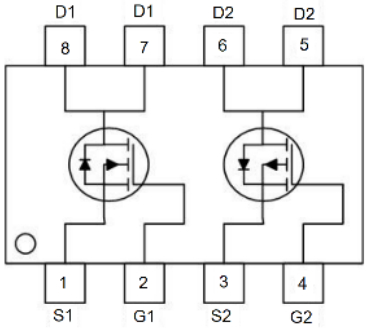
- $R_{DS(ON)}$ = 26mΩ(Typ.)@V_{GS} =10V
  $R_{DS(ON)}$ =35mΩ(Typ.)@V_{GS} = 4.5V
  $R_{DS(ON)}$ = 38mΩ(Typ.)@V_{GS} = -10V
  $R_{DS(ON)}$ = 58mΩ(Typ.)@V_{GS} = -4.5V
- Low Gate Charge

APPLICATION

- Super Low Gate Charge
- Excellent CdV//dt Effect Decline
- Advanced High Cell Density Trench Technology

PIN DESCRIPTION





Pin #	Symbol	Function
1	S1	Source
2	G1	Gate
3	S2	Source
4	G2	Gate
5	D2	Drain
6	D2	Drain
7	D1	Drain
8	D1	Drain

ORDERING INFORMATION

Package Type	Part Number	
SOP8 SPQ: 3,000/Reel	M8	AM4614M8R
		AM4614M8VR
Note	R: Tape & Reel V: Halogen free Package	
AiT provides all RoHS products		

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	N-CH	P-CH	Unit
Drain-Source Voltage		V_{DS}	40	-40	V
Gate-Source Voltage		V_{GS}	±20	±20	V
Continuous Drain Current, V_{GS}@10V(1)	T_C=25℃	I_D	7.2	-7.5	A
	T_C=100℃		5.6	-5.1	A
Pulsed Drain Current(2)		I_{DM}	14.5	-13	A
Single Pulse Avalanche Energy		EAS	28	66	mJ
Avalanche Current		I_{AS}	17.8	-27.2	A
Total Power Dissipation	T_C=25℃	P_D	2.5	3.1	W
Storage Temperature Range		T_{STG}	-55℃ ~ +150		℃
Operation Junction Temperature		T_J	-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.

(1) Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

(2) Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

ELECTRICAL CHARACTERISTICS

T_J= 25°C, unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Off Characteristic						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40 V, V_{GS}=0V	-	-	1.0	μA
Gate to Body Leakage Current	I_{GSS}	V_{DS}= 0V, V_{GS}=±20V	-	-	±100	nA
On Characteristic						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	1.0	1.5	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=4A	-	26	40	mΩ
		V_{GS}=4.5V, I_D=3A	-	35	60	
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{DS}=20V, V_{GS}=0V, f=1.0MHz	-	435	-	pF
Output Capacitance	C_{oss}		-	58	-	
Reverse Transfer Capacitance	C_{rss}		-	35	-	
Total Gate Charge	Q_g	V_{DS}=20V, I_D=3A, V_{GS}=10V	-	11	-	nC
Gate-Source Charge	Q_{gs}		-	2	-	
Gate-Drain (“Miller”) Charge	Q_{gd}		-	2.5	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=20V, I_D=4A, R_L=1Ω, R_{GEN}=3Ω, V_{GS}=10V	-	10	-	nS
	t_r		-	8	-	
Turn-Off Delay Time	$t_{d(off)}$		-	29	-	
	t_f		-	12	-	
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I_S	-	-	-	7.2	A
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}	-	-	-	20	A
Drain to Source Diode Forward oltage	V_{SD}	V_{GS}=0V, I_S=5A	-	-	1.2	V
Body Diode Reverse Recovery Time	t_{rr}		-	20	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}	T_J=25°C, I_F=5A, dI/dt=100A/μs	-	11	-	nC

P-CHANNEL ELECTRICAL CHARACTERISTICS

T_J= 25°C, unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Off Characteristic						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=-250μA	-40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-40 V, V_{GS}=0V	-	-	-1	μA
Gate to Body Leakage Current	I_{GSS}	V_{DS}= 0V, V_{GS}=±20V	-	-	±100	nA
On Characteristic						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=-250μA	-1.0	-1.6	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-6A	-	38	53	mΩ
		V_{GS}=-4.5V, I_D=-4A	-	58	81	
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-20V, V_{GS}=0V, f=1.0MHz	-	860	-	pF
Output Capacitance	C_{oss}		-	87	-	
Reverse Transfer Capacitance	C_{rss}		-	70	-	
Total Gate Charge	Q_g	V_{DS}=-20V, I_D=-6A, V_{GS}=-10V	-	13	-	nC
Gate-Source Charge	Q_{gs}		-	3.8	-	
Gate-Drain (“Miller”) Charge	Q_{gd}		-	3.1	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=-20V, R_L=2.3Ω, V_{GS}=-10V R_{GEN}=6Ω	-	7.5	-	nS
	t_r		-	5.5	-	
Turn-Off Delay Time	$t_{d(off)}$		-	19	-	
	t_f		-	7	-	
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current	I_S	-	-	-	-7.5	A
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}	-	-	-	-24	A
Drain to Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=-6A	-	-	-1.2	V

TYPICAL PERFORMANCE CHARACTERISTICS-N

Fig 1. Output Characteristics

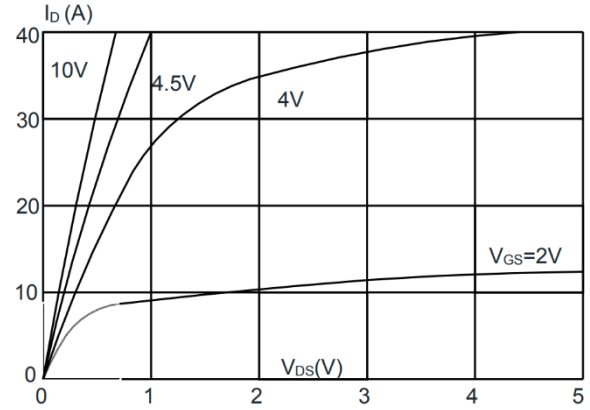


Fig 2. Typical Transfer Characteristics

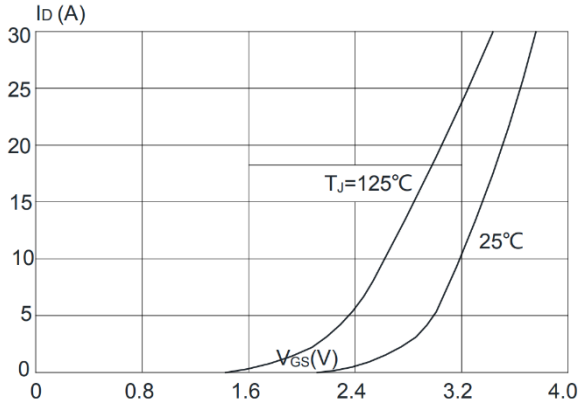


Fig 3. On-Resistance vs. Drain Current

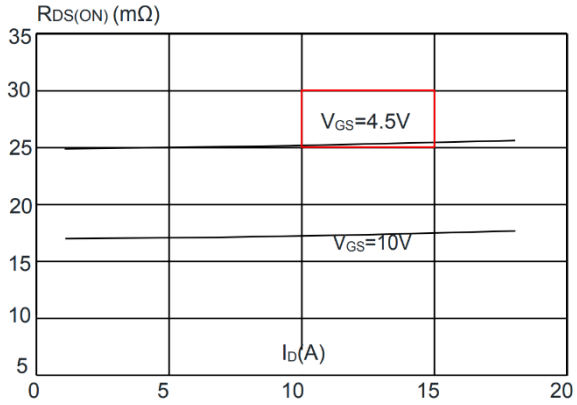


Fig 4. Body Diode Characteristics

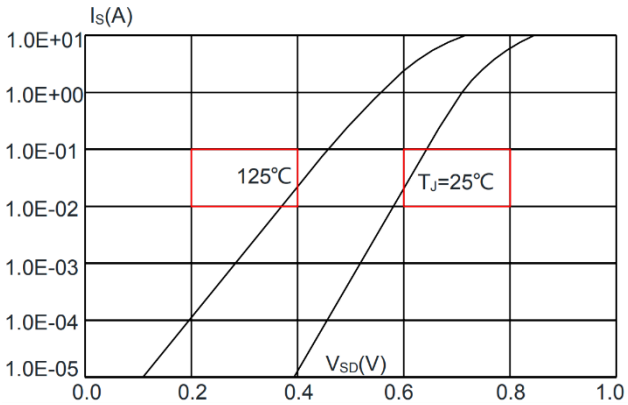


Fig 5. Gate Charge Characteristics

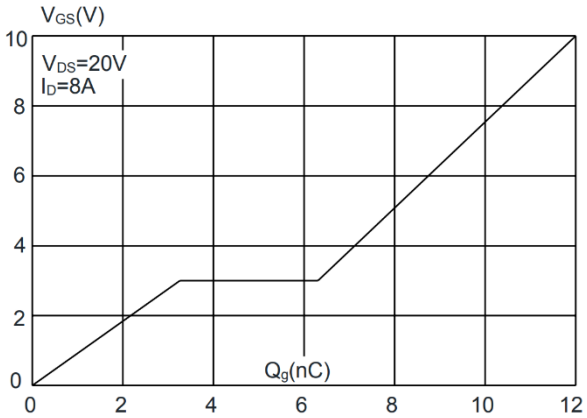


Fig 6. Capacitance Characteristics

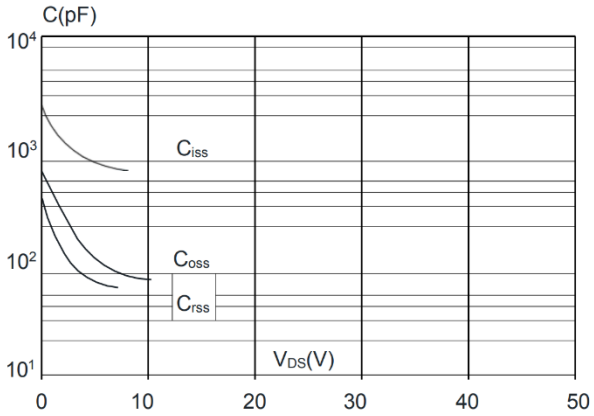


Fig 7. Normalized Breakdown Voltage vs. Junction Temperature

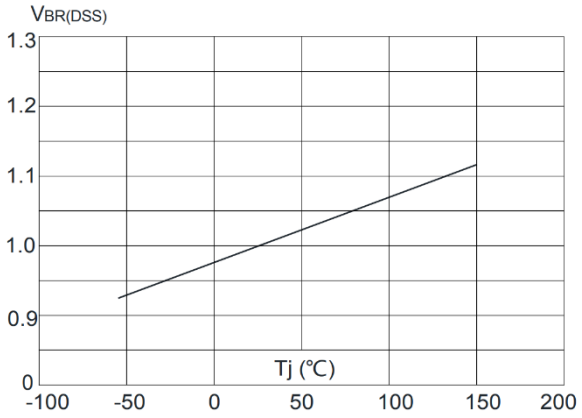


Fig 8. Normalized on Resistance vs. Junction Temperature

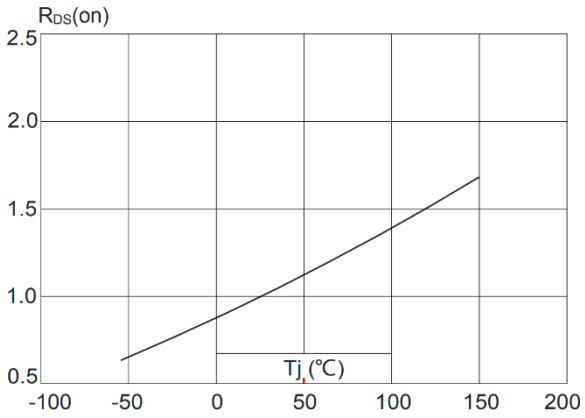


Fig 9. Maximum Safe Operation Area

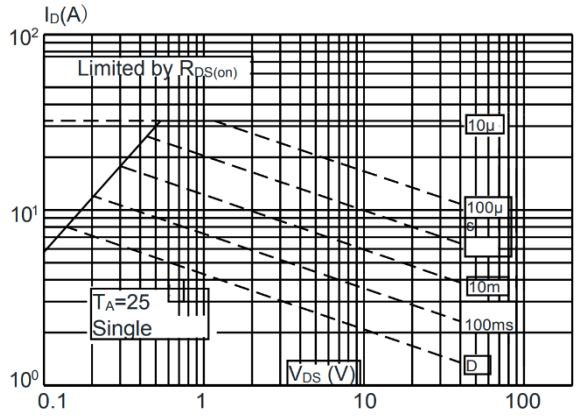


Fig 10. Maximum Continuous Drain Current vs. Amber Temperature

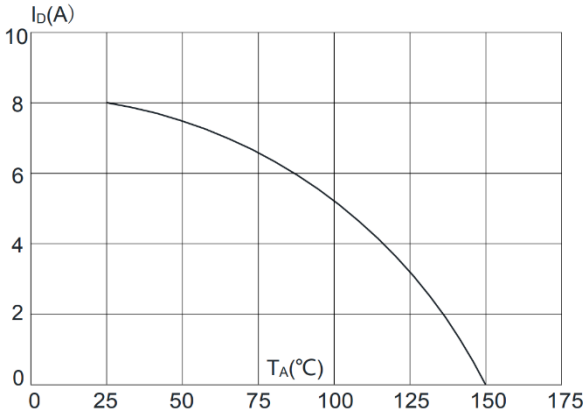
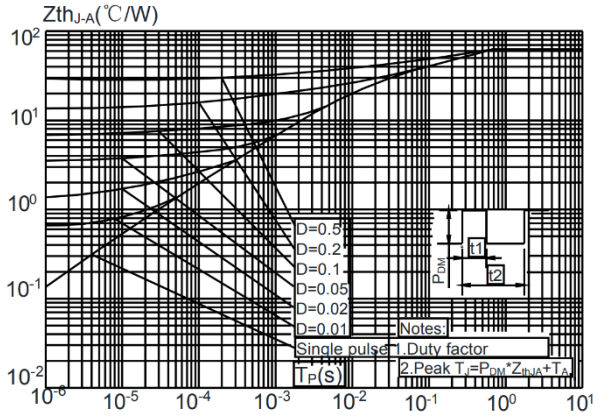


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



TYPICAL PERFORMANCE CHARACTERISTICS-P

Fig 1. Output Characteristics

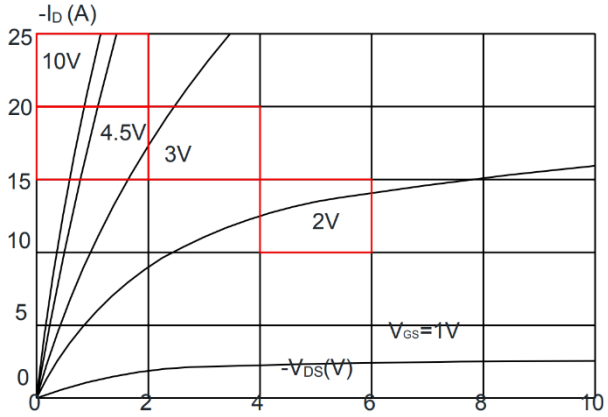


Fig 2. Typical Transfer Characteristics

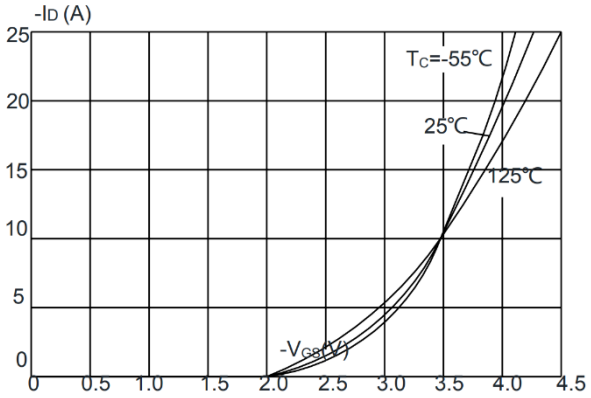


Fig 3. On-Resistance vs. Drain Current

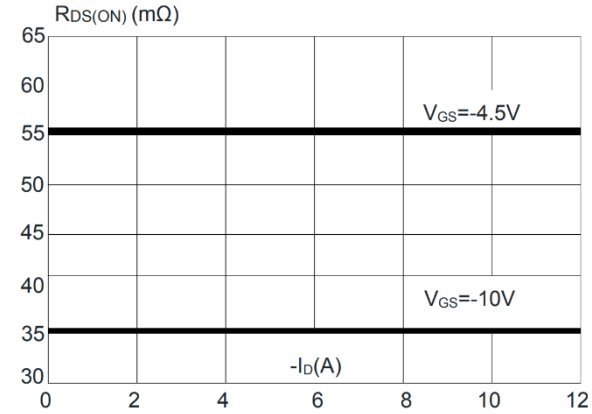


Fig 4. Body Diode Characteristics

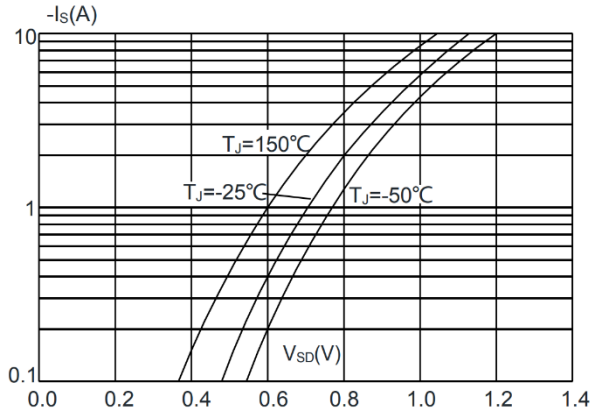


Fig 5. Gate Charge Characteristics

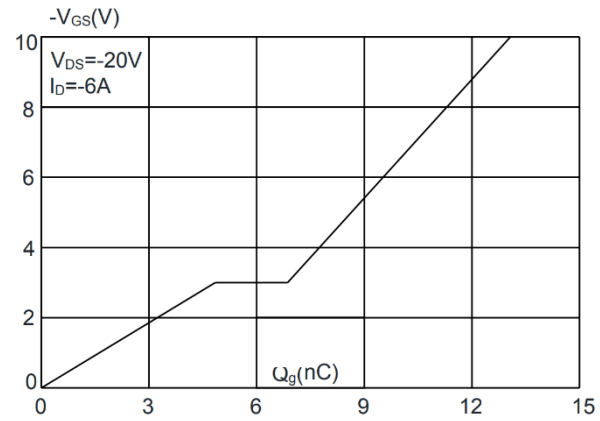


Fig 6. Capacitance Characteristics

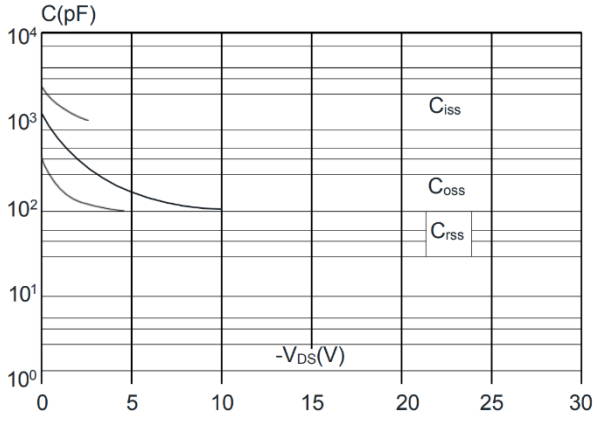


Fig 7. Normalized Breakdown Voltage vs. Junction Temperature

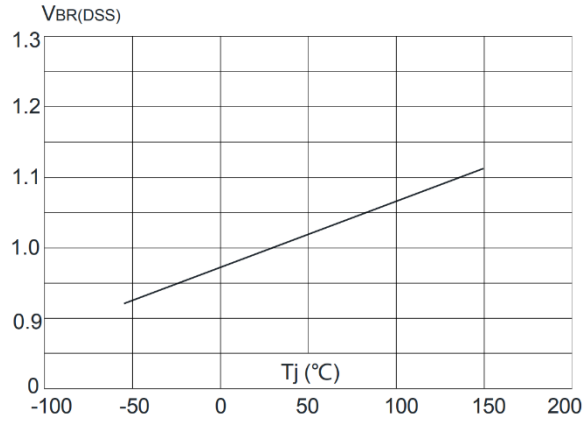


Fig 8. Normalized on Resistance vs. Junction Temperature

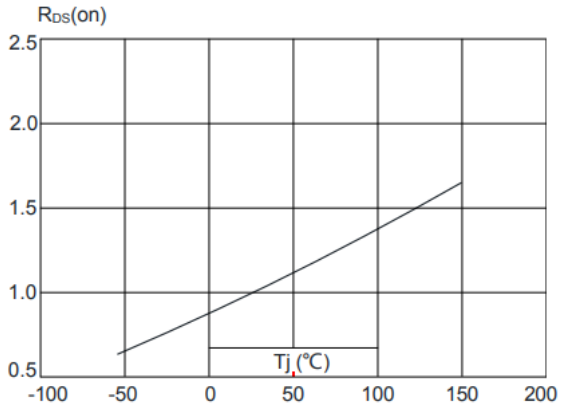


Fig 9. Maximum Safe Operation Area

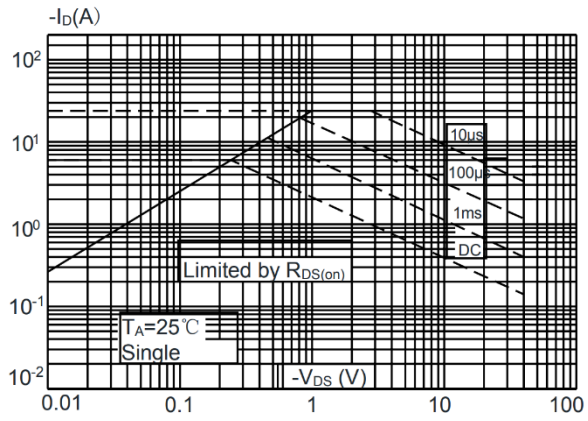


Fig 10. Maximum Continuous Drain Current vs. Amber Temperature

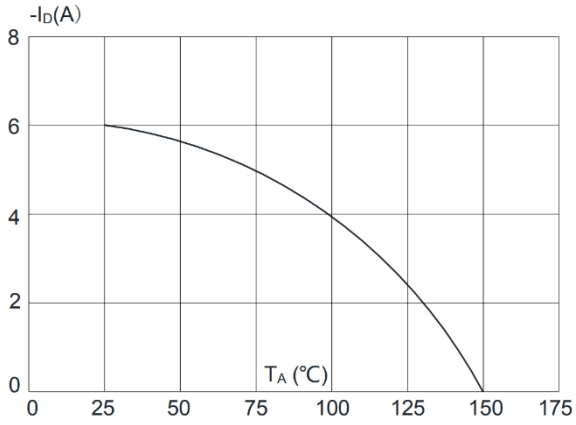
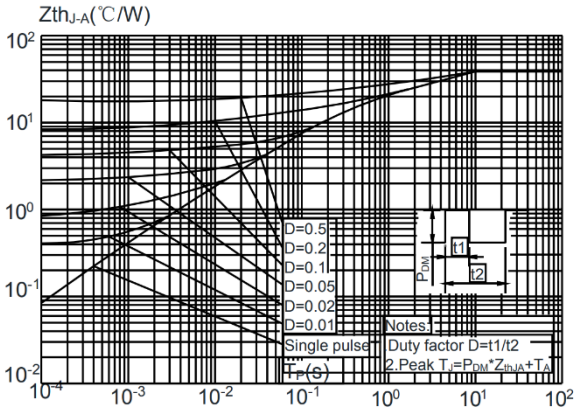
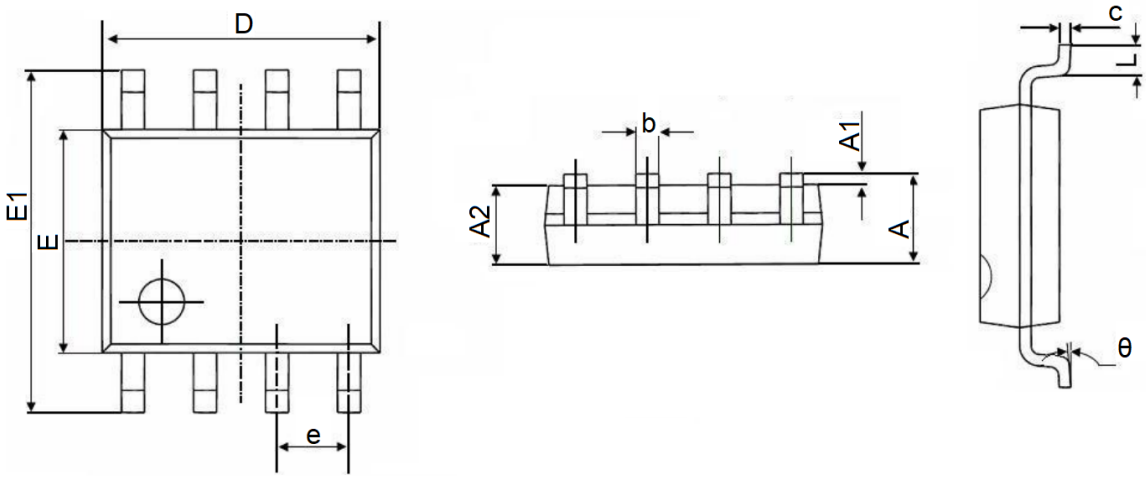


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



PACKAGE INFORMATION

Dimension in SOP8 (unit: mm)



Symbol	Millimeters	
	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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