Features

- N-Channel
  100V/5A,
  R_{DS}(ON) = 95 mΩ @ VGS = 10V
- P-Channel
  -100V/-4A,
  R_{DS}(ON) = 185mΩ @ VGS = -10V

Application

- DC-DC primary bridge
- DC-DC Synchronous rectification
- Hot swap
- Fan drive

Product Summary

RoHS

N-Channel

V_{DS}	100	V
$R_{DS(on),Typ}$@ V_{GS}=10 V	95	mΩ
I_D	5	A

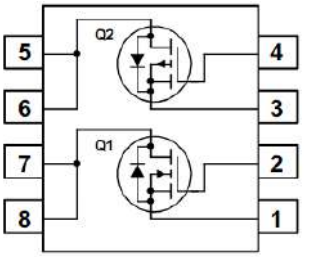
P-Channel

V_{DS}	-100	V
$R_{DS(on),Typ}$@ V_{GS}=-10 V	185	mΩ
I_D	-4	A

top view

SOP-8

Simplified Schematic



Absolute Maximum Ratings

T_A = 25°C unless otherwise noted

Symbol	Parameter		N-CH	P-CH	Units
V_{DSS}	Drain-Source Voltage		100	-100	V
V_{GSS}	Gate-Source Voltage		±20	±20	V
I_D	Drain Current - Continuous	(Note 1a)	5	-4	A
	- Pulsed		20	-20	
P_D	Power Dissipation for Dual Operation		2.5		W
	Power Dissipation for Single Operation	(Note 1a)	1.6		
		(Note 1b)	1		
		(Note 1c)	0.9		
T_J, T_{STG}	Operating and Storage Junction Temperature Range		-55 to +150		°C

Thermal Characteristics

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	(Note 1a)	78	°C/W
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	(Note 1)	40	°C/W

Electrical Characteristics

T_A = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Type	Min	Typ	Max	Units
Off Characteristics							
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = 250 µA V_{GS} = 0 V, I_D = -250 µA	N-CH P-CH	100 -100			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Breakdown Voltage Temperature Coefficient	I_D = 250 µA, Referenced to 25°C I_D = -250 µA, Referenced to 25°C	N-CH P-CH		25 -22		mV/°C
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 24 V, V_{GS} = 0 V V_{DS} = -24 V, V_{GS} = 0 V	N-CH P-CH			1 -1	µA
I_{GSSF}	Gate-Body Leakage, Forward	V_{GS} = 20 V, V_{DS} = 0 V	All			100	nA
I_{GSSR}	Gate-Body Leakage, Reverse	V_{GS} = -20 V, V_{DS} = 0 V	All			-100	nA
On Characteristics (Note 2)							
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250 µA V_{DS} = V_{GS}, I_D = -250 µA	N-CH P-CH	1 -2	1.6 -	3 -4	V
$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	Gate Threshold Voltage Temperature Coefficient	I_D = 250 µA, Referenced to 25°C I_D = -250 µA, Referenced to 25°C			-4.3 4		mV/°C
$R_{DS(on)}$	Static Drain-Source On-Resistance	V_{GS} = 10 V, I_D = 4 A, T_J =25°C	N-CH		95	100	mΩ
		V_{GS} = -10 V, I_D = -3 A,T_J =25°C	P-CH		185	200	
$I_{D(on)}$	On-State Drain Current	V_{GS} = 10 V, V_{DS} = 5 V V_{GS} = -10 V, V_{DS} = -5 V	N-CH P-CH	5 -4			A
g_{FS}	Forward Transconductance	V_{DS} = 5 V, I_D = 7 A V_{DS} = -5 V, I_D =-5 A	N-CH P-CH		11 11		S
Dynamic Characteristics							
C_{iss}	Input Capacitance	N-CH V_{DS} = 10 V, V_{GS} = 0 V, f = 1.0 MHz P-CH V_{DS} = -10 V, V_{GS} = 0 V, f = 1.0 MHz	N-CH P-CH		620 620		pF
C_{oss}	Output Capacitance		N-CH P-CH		120 220		pF
C_{rss}	Reverse Transfer Capacitance		N-CH P-CH		31 65		pF
Switching Characteristics (Note 2)							
$t_{d(on)}$	Turn-On Delay Time	N-CH V_{DD} = 10 V, I_D = 1 A, V_{GS} = 10V, R_{GEN} = 6 Ω P-CH V_{DD} = -10 V, I_D = -1 A, V_{GS} = -10V, R_{GEN} = 6 Ω	N-CH P-CH		12 14		ns
t_r	Turn-On Rise Time		N-CH P-CH		400 160		ns
$t_{d(off)}$	Turn-Off Delay Time		N-CH P-CH		20 35		ns
t_f	Turn-Off Fall Time		N-CH P-CH		120 60		ns
Q_g	Total Gate Charge	N-CH V_{DS} = 15 V, I_D = 4 A, V_{GS} = 10 V P-CH V_{DS} = -15 V, I_D = -3 A,V_{GS} = -10 V	N-CH P-CH		12 21		nC
Q_{gs}	Gate-Source Charge		N-CH P-CH		2.5 4.6		nC
Q_{gd}	Gate-Drain Charge		N-CH P-CH		9.0 11.5		nC
Drain–Source Diode Characteristics and Maximum Ratings							
I_S	Maximum Continuous Drain-Source Diode Forward Current		N-CH P-CH			-5 -4	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} = 0 V, I_S = 1.3 A (Note 2) V_{GS} = 0 V, I_S = -1.3 A (Note 2)	N-CH P-CH			1.5 -1.2	V

Typical Characteristics:N-channel

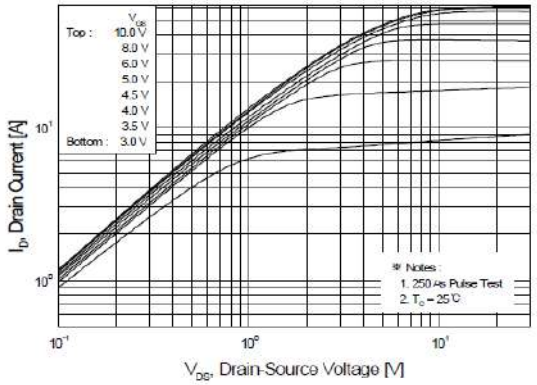


Figure 1. On-Region Characteristics

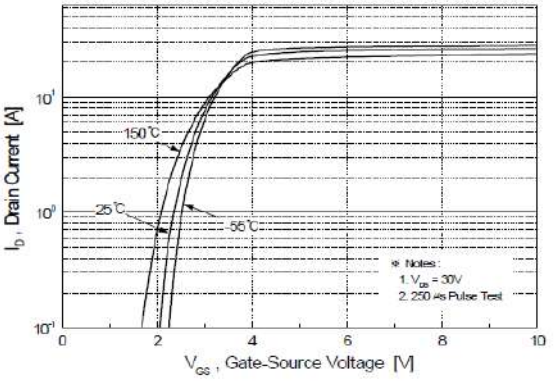


Figure 2. Transfer Characteristics

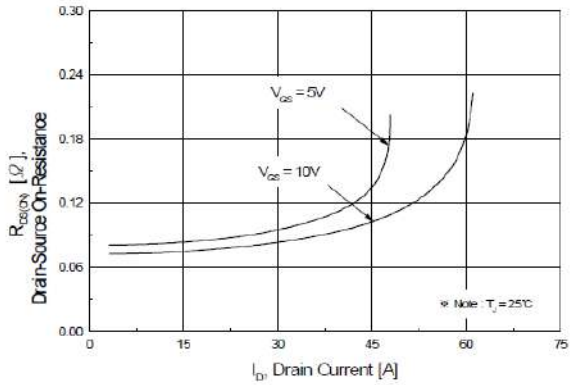


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

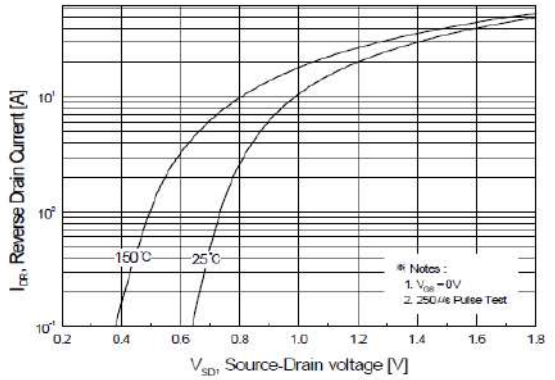


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

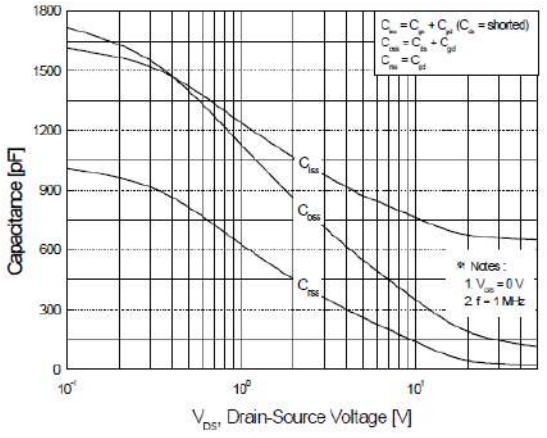


Figure 5. Capacitance Characteristics

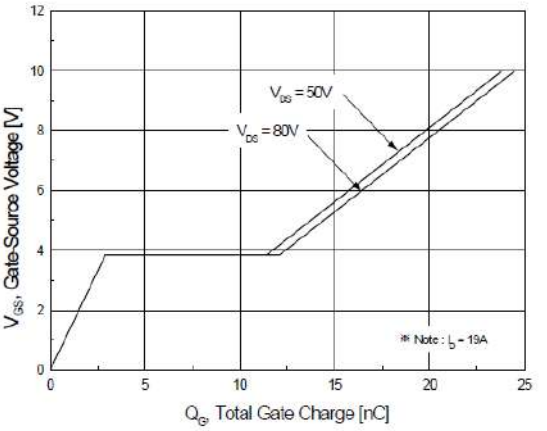


Figure 6. Gate Charge Characteristics

Typical Characteristics:N-channel

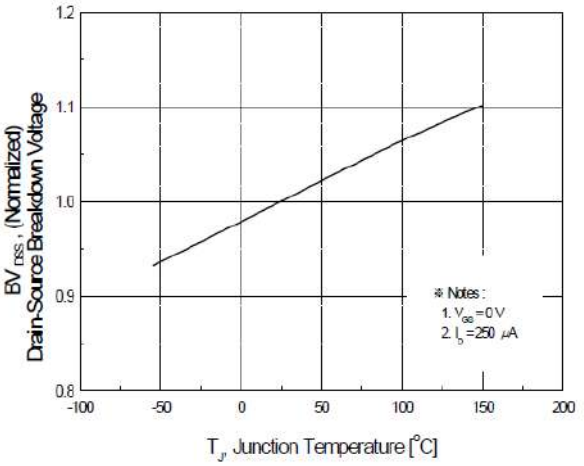


Figure 7. Breakdown Voltage Variation vs. Temperature

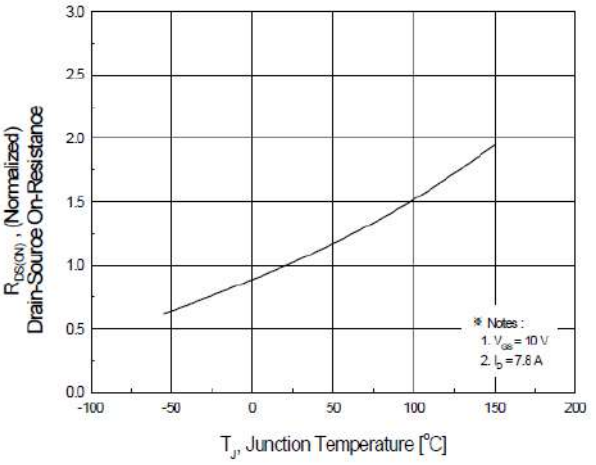


Figure 8. On-Resistance Variation vs. Temperature

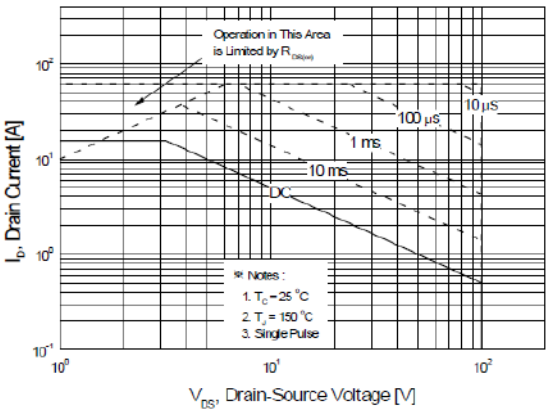


Figure 9. Maximum Safe Operating Area

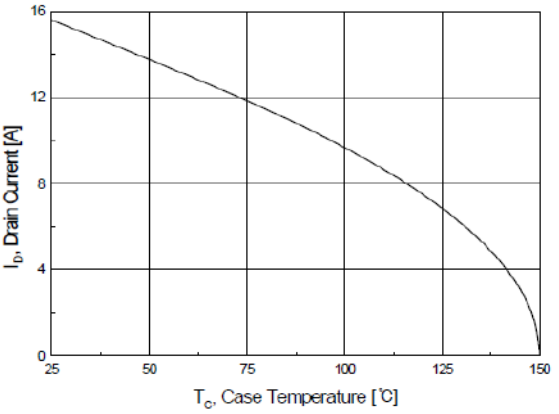


Figure 10. Maximum Drain Current vs. Case Temperature

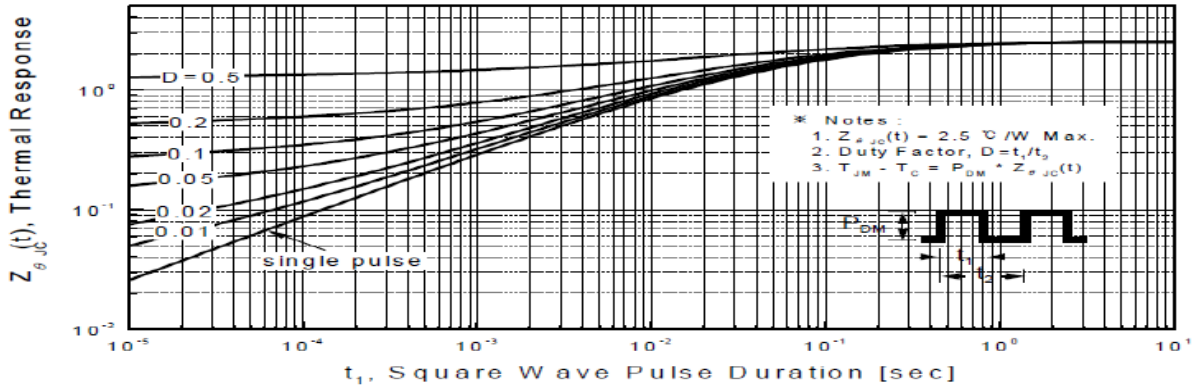


Figure 11. Transient Thermal Response Curve

Typical Characteristics:P-channel

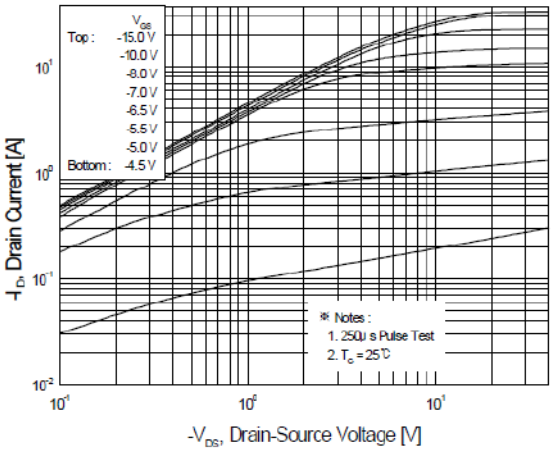


Figure 1. On-Region Characteristics

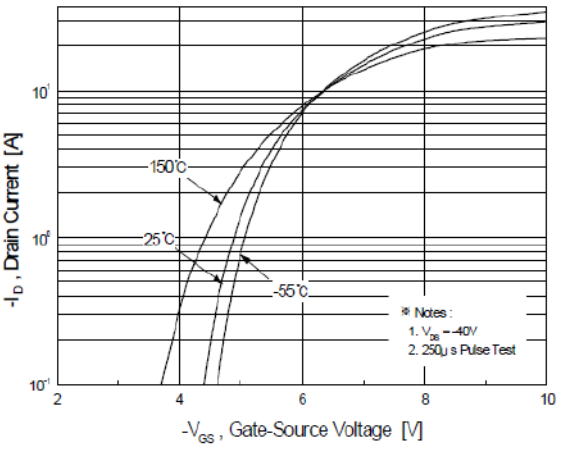


Figure 2. Transfer Characteristics

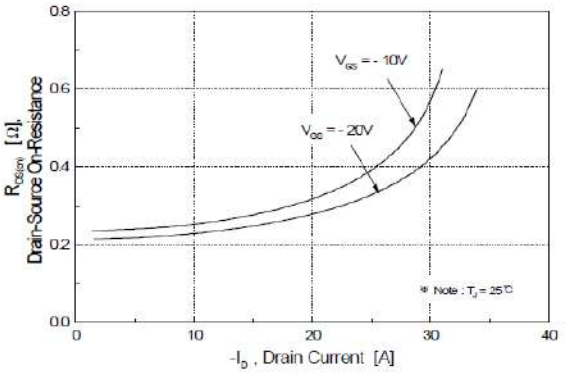


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

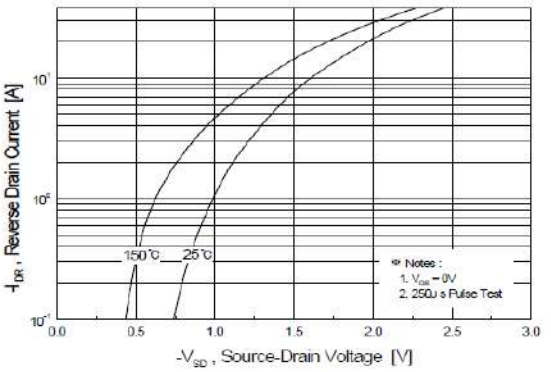


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

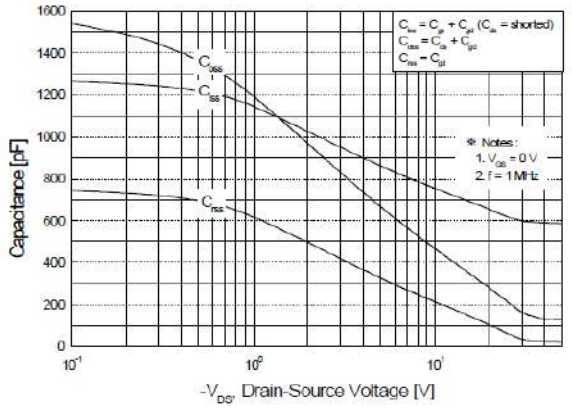


Figure 5. Capacitance Characteristics

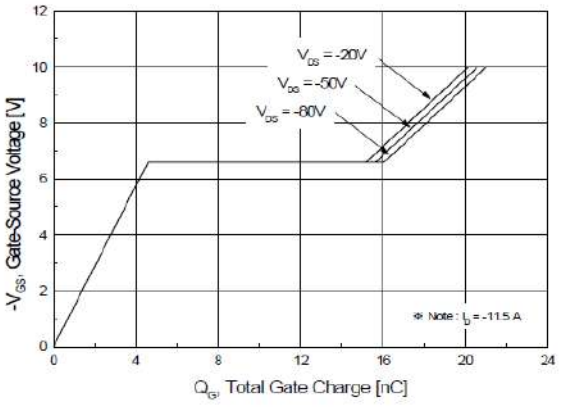


Figure 6. Gate Charge Characteristics

Typical Characteristics:P-channel

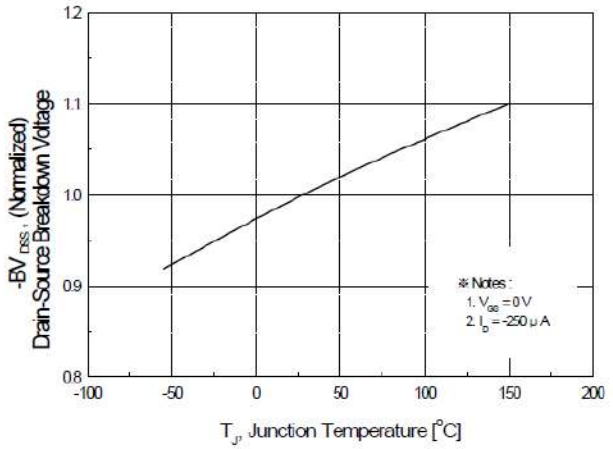


Figure 7. Breakdown Voltage Variation vs. Temperature

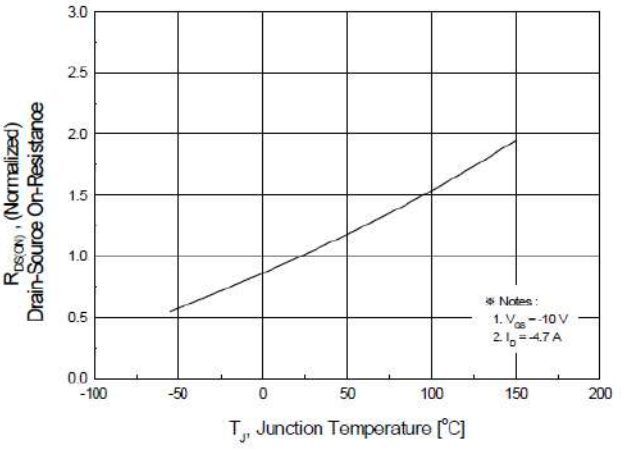


Figure 8. On-Resistance Variation vs. Temperature

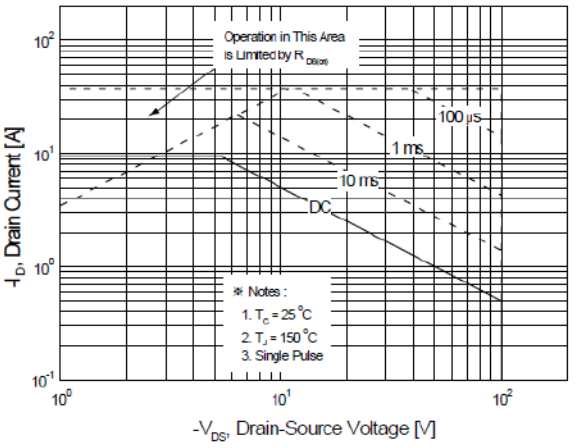


Figure 9. Maximum Safe Operating Area

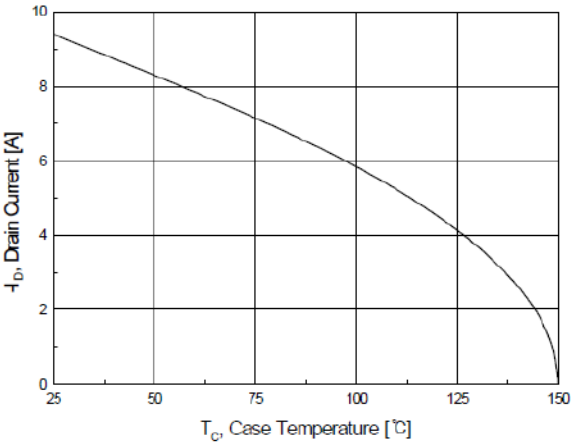


Figure 10. Maximum Drain Current vs. Case Temperature

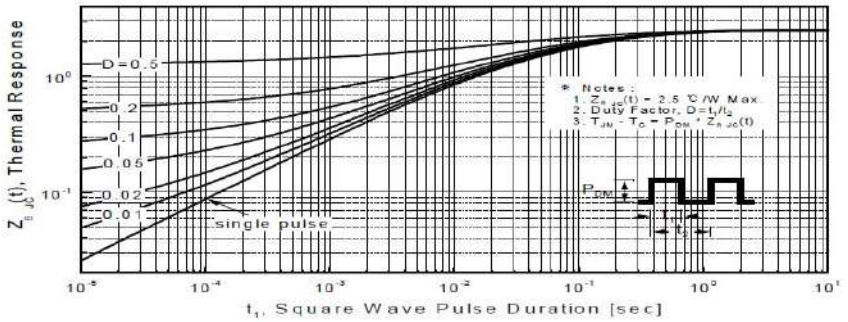
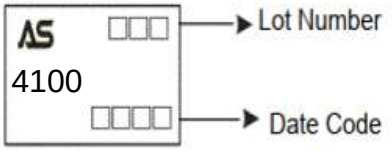


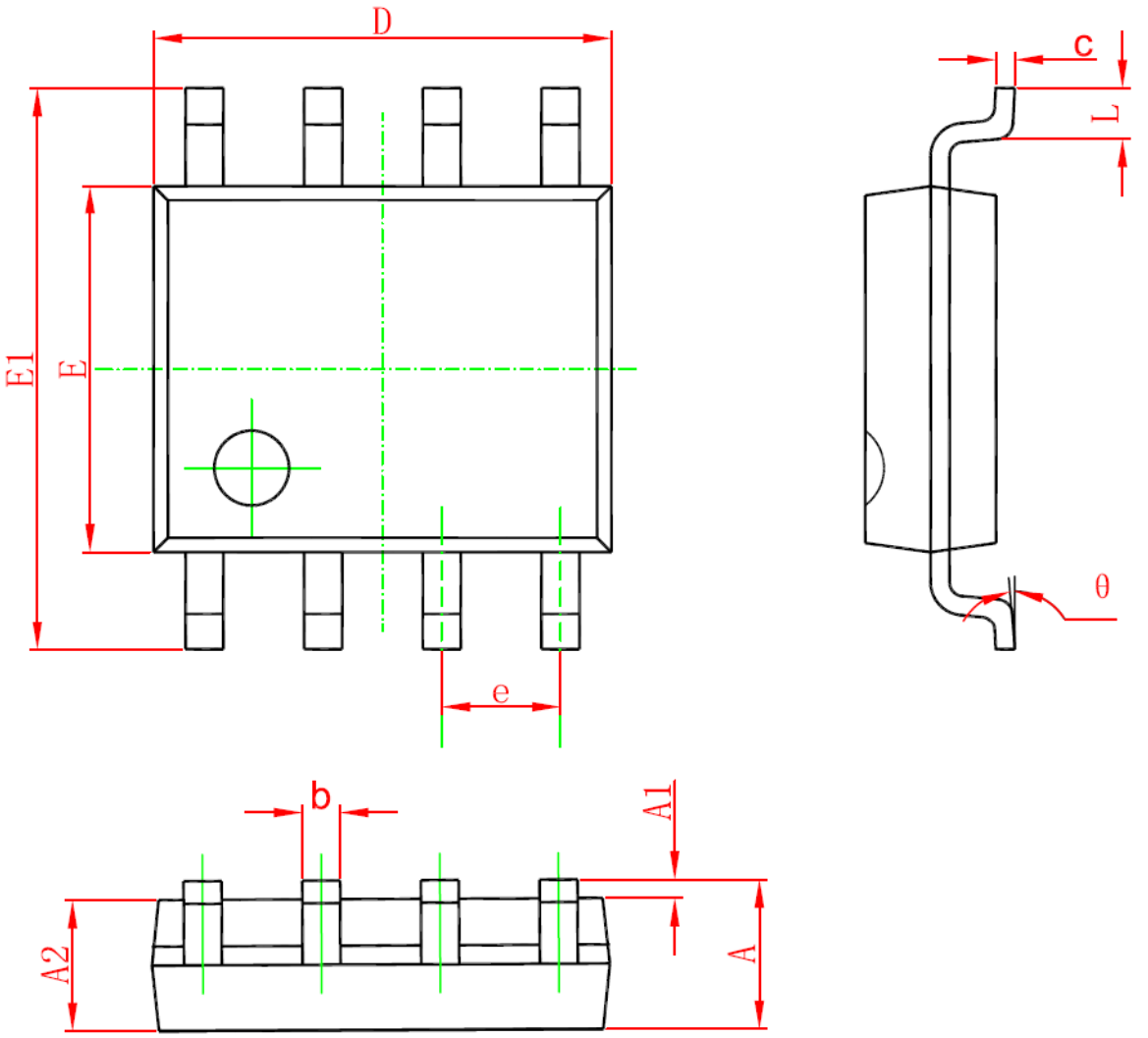
Figure 11. Transient Thermal Response Curve

Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM4100S-R	4100	SOP-8	Tape&Reel	4000

PACKAGE	MARKING
SOP-8	

SOP-8 PACKAGE IN FORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

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