

Features

- N-Channel
100V/5A,
 $R_{DS(ON)} = 95\text{ m}\Omega @ V_{GS} = 10\text{V}$
- P-Channel
-100V/-4A,
 $R_{DS(ON)} = 185\text{ m}\Omega @ V_{GS} = -10\text{V}$

Application

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

Product Summary



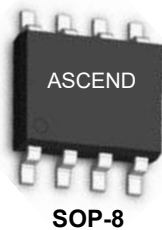
● N-Channel

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

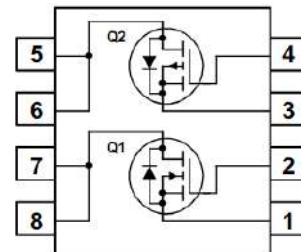
● P-Channel

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

top view



Simplified Schematic



Absolute Maximum Ratings $T_A = 25^\circ\text{C}$ 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) - Pulsed	5	-4	A
		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		$^\circ\text{C}$

Thermal Characteristics

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



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
ΔBV _{DSS} ΔT _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
ΔV _{GS(th)} ΔT _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	N-CH		11		S
		V _{DS} = -5 V, I _D = -5 A	P-CH		11		

Dynamic Characteristics

C _{iss}	Input Capacitance	N-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		
C _{rss}	Reverse Transfer Capacitance	P-CH V _{DS} = -10 V, V _{GS} = 0 V, f = 1.0 MHz	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	N-CH P-CH	12 14			ns
			N-CH P-CH	400 160		ns	
t _{d(off)}	Turn-Off Delay Time	P-CH V _{DD} = -10 V, I _D = -1 A, V _{GS} = -10V, R _{GEN} = 6 Ω	N-CH P-CH	20 35			
			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	N-CH P-CH	12 21			
			N-CH P-CH	2.5 4.6		nC	
Q _{gd}	Gate-Drain Charge	P-CH V _{DS} = -15 V, I _D = -3 A, V _{GS} = -10 V	N-CH P-CH	9.0 11.5			

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)	N-CH			1.5	V
		V _{GS} = 0 V, I _S = -1.3 A (Note 2)	P-CH			-1.2	

Typical Characteristics:N-channel

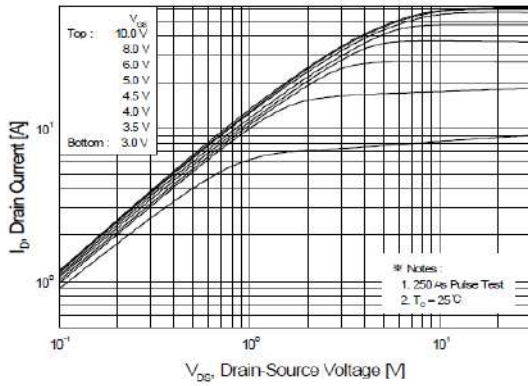


Figure 1. On-Region Characteristics

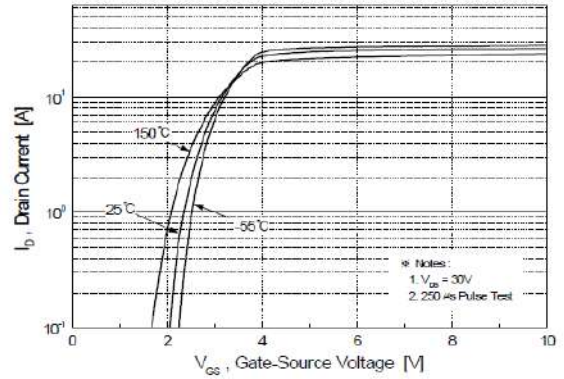


Figure 2. Transfer Characteristics

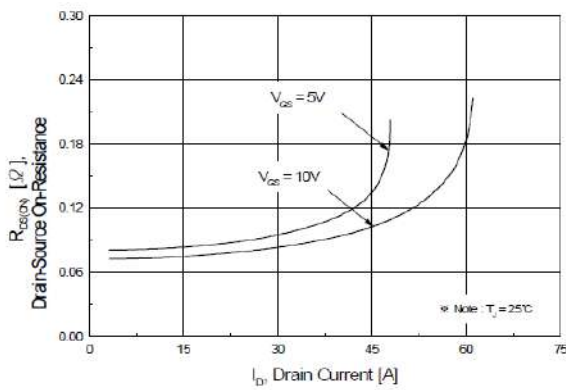


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

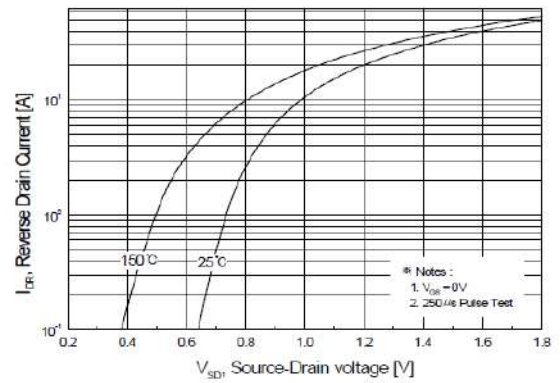


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

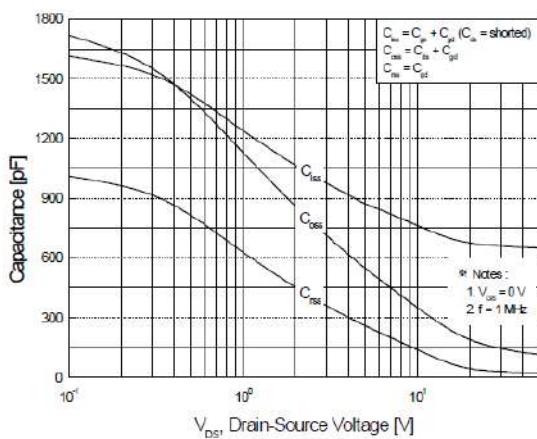


Figure 5. Capacitance Characteristics

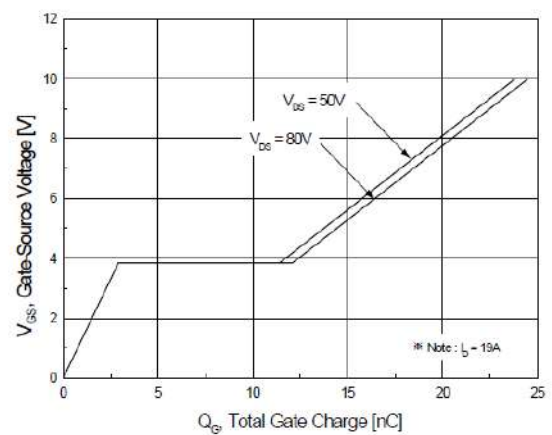


Figure 6. Gate Charge Characteristics

Typical Characteristics:N-channel

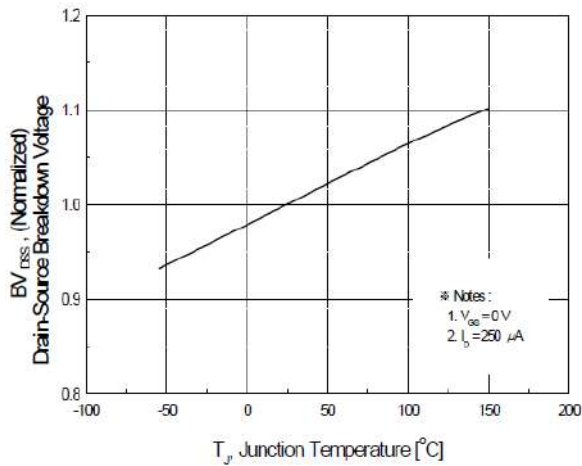


Figure 7. Breakdown Voltage Variation vs. Temperature

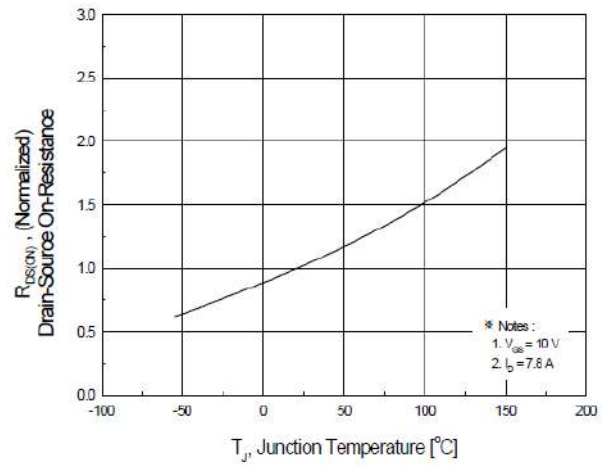


Figure 8. On-Resistance Variation vs. Temperature

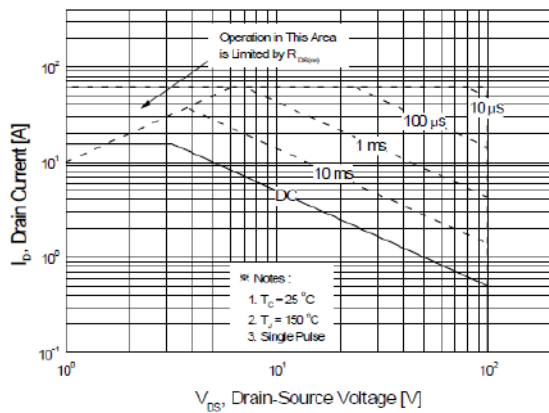


Figure 9. Maximum Safe Operating Area

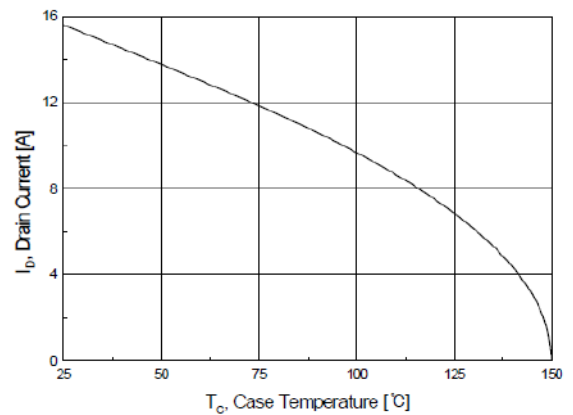


Figure 10. Maximum Drain Current vs. Case Temperature

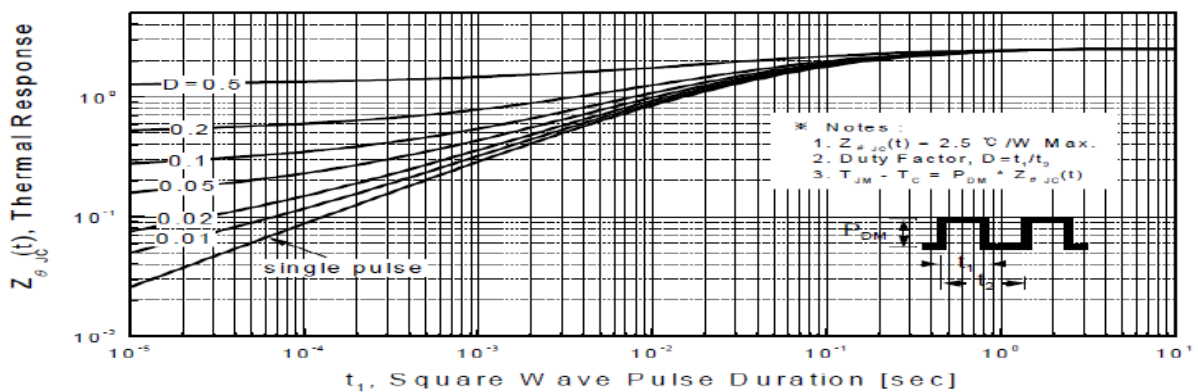


Figure 11. Transient Thermal Response Curve

Typical Characteristics:P-channel

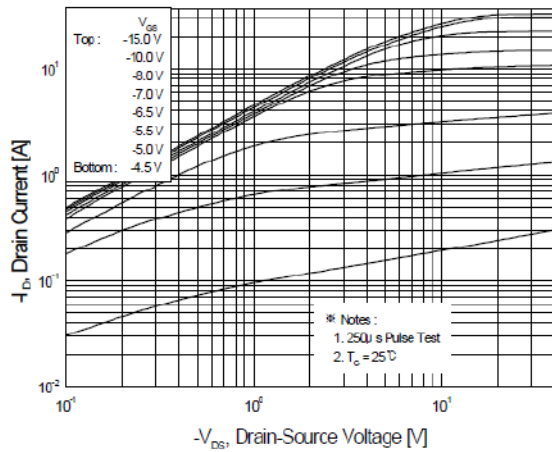


Figure 1. On-Region Characteristics

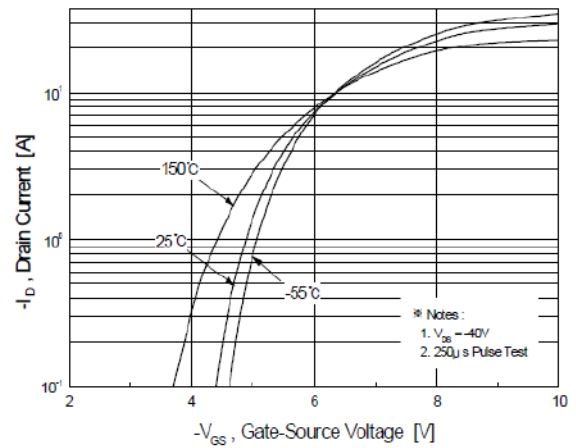


Figure 2. Transfer Characteristics

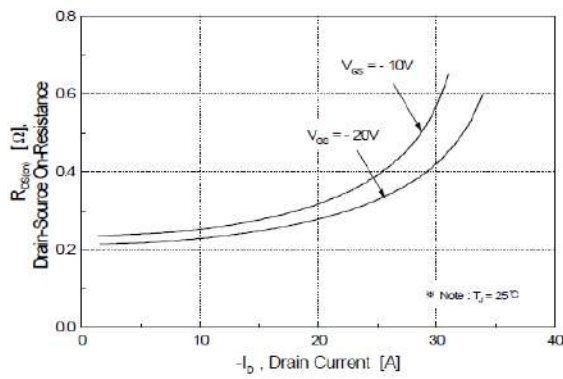


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

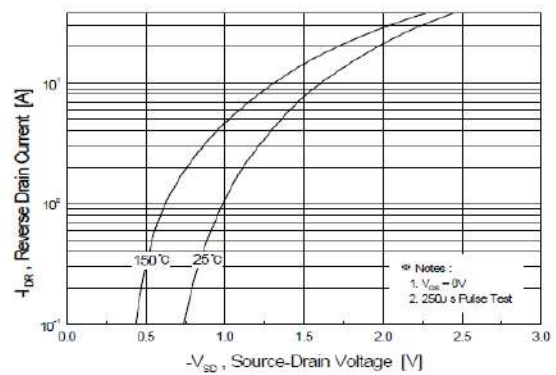


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

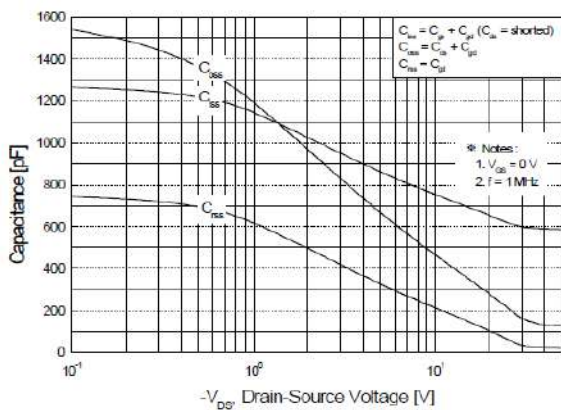


Figure 5. Capacitance Characteristics

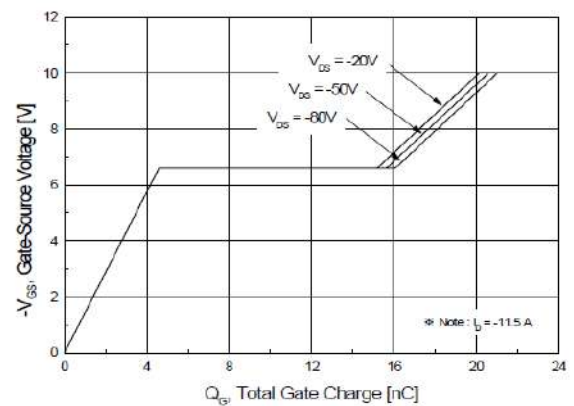


Figure 6. Gate Charge Characteristics

Typical Characteristics:P-channel

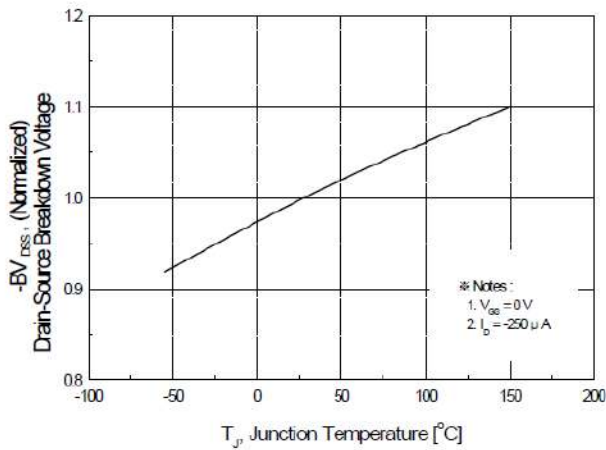


Figure 7. Breakdown Voltage Variation vs. Temperature

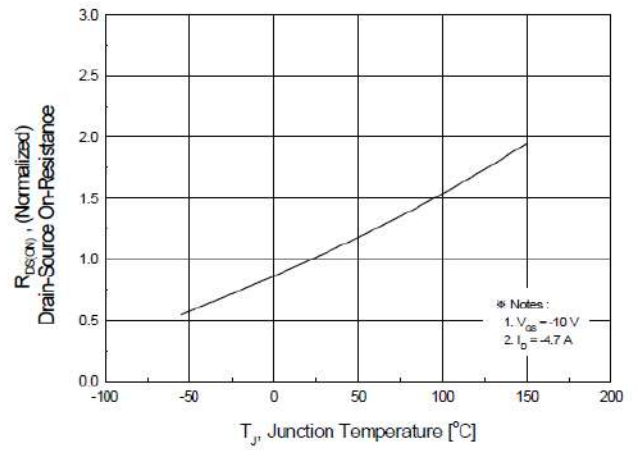


Figure 8. On-Resistance Variation vs. Temperature

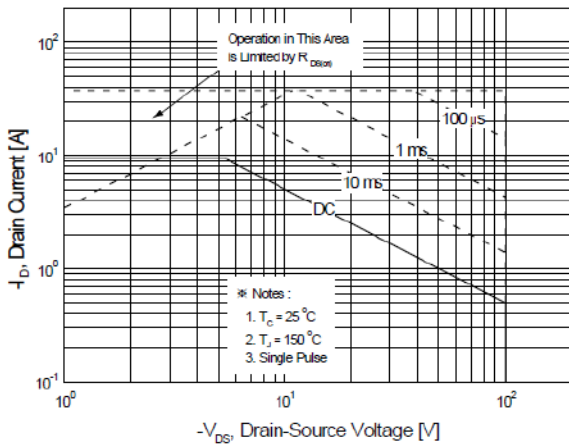


Figure 9. Maximum Safe Operating Area

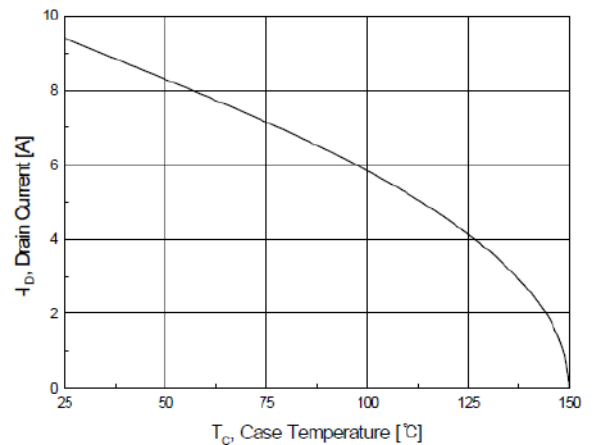


Figure 10. Maximum Drain Current vs. Case Temperature

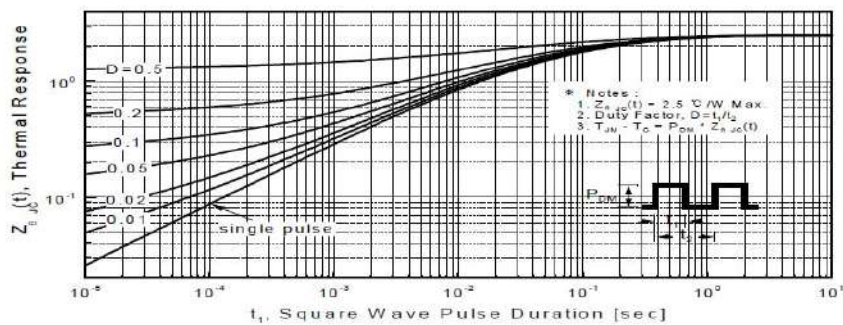
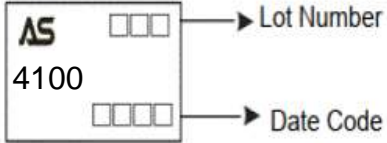


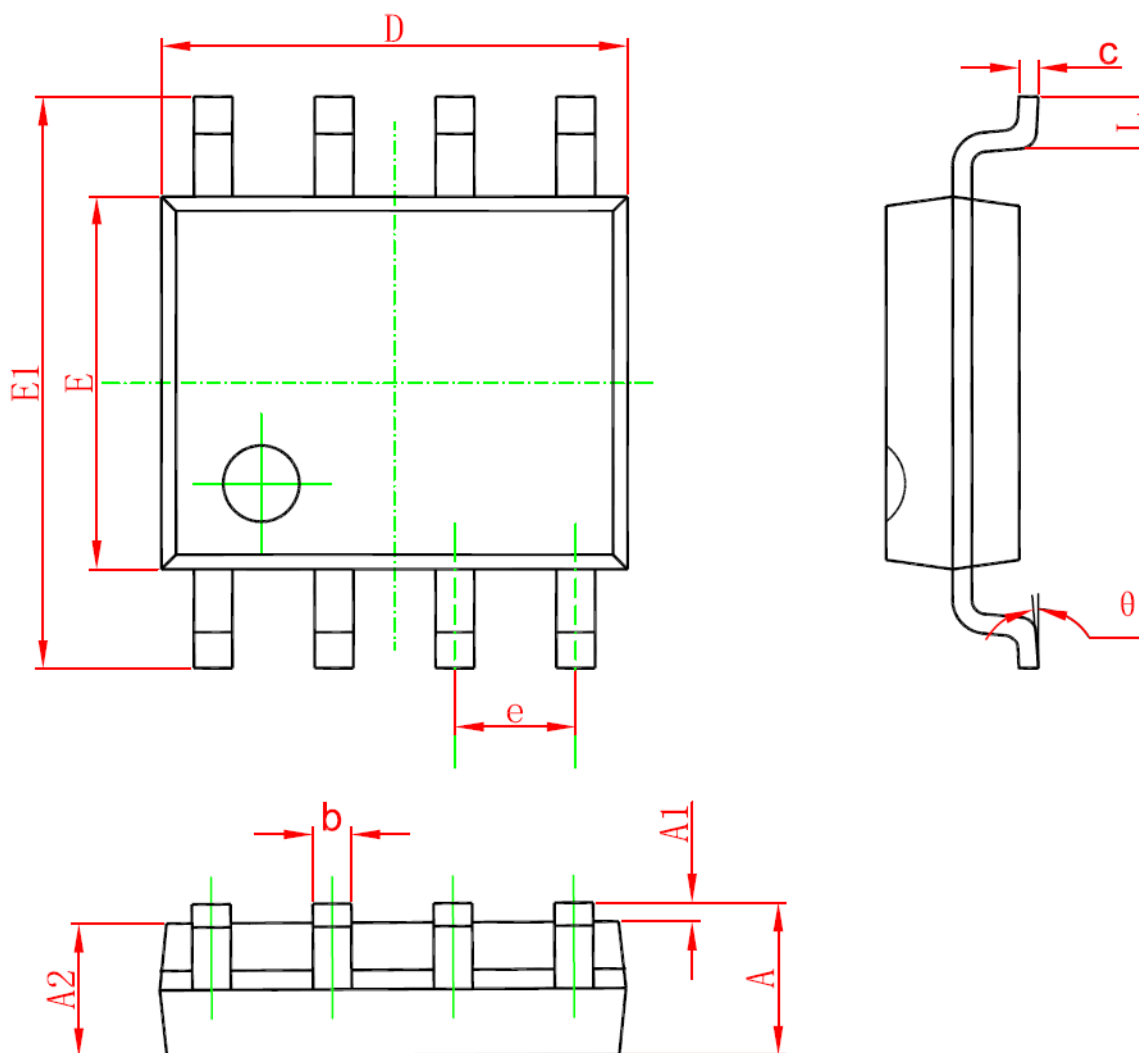
Figure 11. Transient Thermal Response Curve

Ordering and Marking Information

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

PACKAGE	MARKING
SOP-8	 <p>The diagram shows a rectangular marking area on a component. It contains the letters 'AS' in the top left, the number '4100' in the middle left, and two sets of four empty boxes on the right. Arrows point from these boxes to the labels 'Lot Number' and 'Date Code'.</p>

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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