

Features

- High power and current handling capability
- Lead free product is acquired
- Surface mount package

Application

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

Product Summary



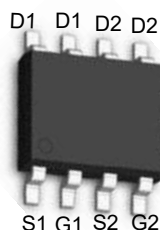
● N-Channel

V_{DS}		100	V
$R_{DS(on), Typ}$	$V_{GS}=10V$	98	m Ω
$R_{DS(on), Typ}$	$V_{GS}=4.5V$	104	m Ω
I_D		4	A

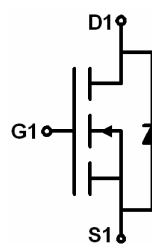
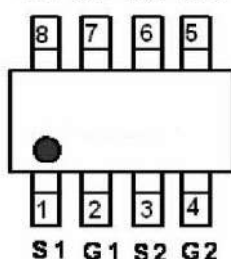
● P-Channel

V_{DS}		-100	V
$R_{DS(on), Typ}$	$V_{GS}=-10V$	122	m Ω
$R_{DS(on), Typ}$	$V_{GS}=-4.5V$	125	m Ω
I_D		-3	A

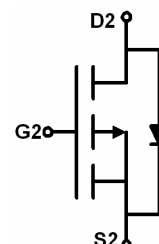
SOP-8 top view



D1 D1 D2 D2



N-channel



P-channel

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V_{DS}	100	-100	V
Gate-Source Voltage	V_{GS}	± 20	± 20	V
Continuous Drain Current	I_D	4	-3	A
Pulsed Drain Current (Note 1)	I_{DM}	16	-12	A
Maximum Power Dissipation	P_D	2.5	1.6	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	-55 To 150	$^\circ\text{C}$

Thermal Characteristic

Thermal Resistance, Junction-to-Ambient (Note2)	$R_{\theta JA}$	N-Ch	89	$^\circ\text{C/W}$
		P-Ch	90	

N-CH Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250μA	100		-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =80V,V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V,V _{DS} =0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250μA	1		2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =3A	-	98	120	mΩ
		V _{GS} =4.5V, I _D =2A	-	104	125	mΩ
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =2.5A	-	20	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C _{iss}	V _{DS} =15V,V _{GS} =0V , F=1.0MHz	-	723	-	PF
Output Capacitance	C _{Oss}		-	28	-	PF
Reverse Transfer Capacitance	C _{rss}		-	17	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =50V, R _L =3Ω V _{GS} =10V,R _{GEN} =3Ω	-	3.9	-	nS
Turn-on Rise Time	t _r		-	7.7	-	nS
Turn-Off Delay Time	t _{d(off)}		-	33.8	-	nS
Turn-Off Fall Time	t _f		-	9.1	-	nS
Total Gate Charge	Q _g	V _{DS} =50V,I _D =3.5 A, V _{GS} =10V	-	6.2	-	nC
Gate-Source Charge	Q _{gs}		-	1.25	-	nC
Gate-Drain Charge	Q _{gd}		-	1.7	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V,I _S =1A	-	-	1.3	V
Diode Forward Current (Note 2)	I _S		-	-	4	A

P-CH Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V\ I_D=-250\mu A$	-100		-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-100V\ ,\ V_{GS}=0V$	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1		-2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-2.5A$	-	122	146	m Ω
		$V_{GS}=-4.5V, I_D=-2.0A$	-	125	150	m Ω
Forward Transconductance	g_{FS}	$V_{GS}=-5V, I_D=-2.5A$	12	-	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{iss}	$V_{DS}=-25V, V_{GS}=0V,$ $F=1.0MHz$	-	1774	-	PF
Output Capacitance	C_{oss}		-	338	-	PF
Reverse Transfer Capacitance	C_{rss}		-	203	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-25V, R_L=3.6\Omega$ $V_{GS}=-10V, R_{GEN}=3\Omega$	-	8	-	nS
Turn-on Rise Time	t_r		-	4	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	27	-	nS
Turn-Off Fall Time	t_f		-	12.5	-	nS
Total Gate Charge	Q_g	$V_{DS}=-50V, I_D=-2.5A, V_{GS}=-10V$	-	13	-	nC
Gate-Source Charge	Q_{gs}		-	3.2	-	nC
Gate-Drain Charge	Q_{gd}		-	4	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	$V_{GS}=0V, I_S=-1A$	-	-	-1.3	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

Typical Characteristics:N-channel

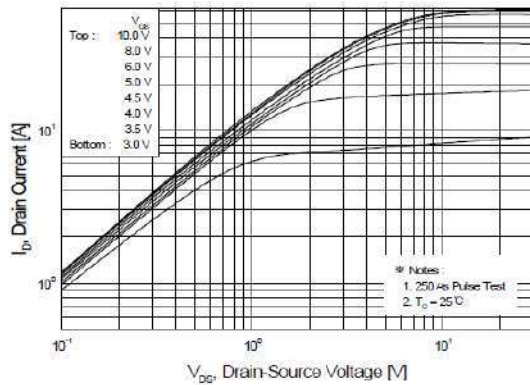


Figure 1. On-Region Characteristics

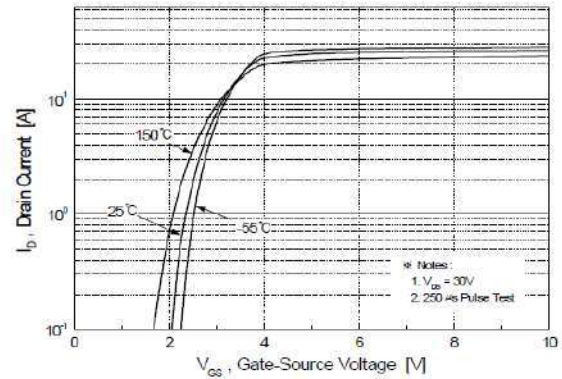


Figure 2. Transfer Characteristics

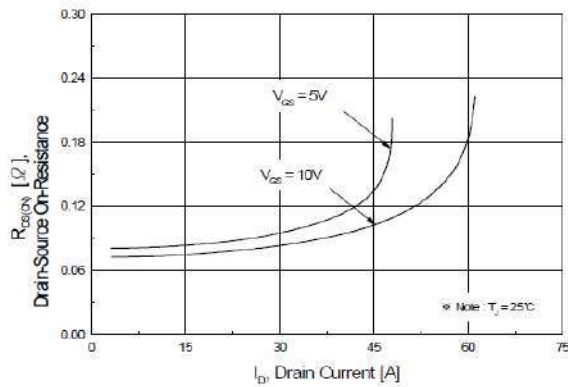


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

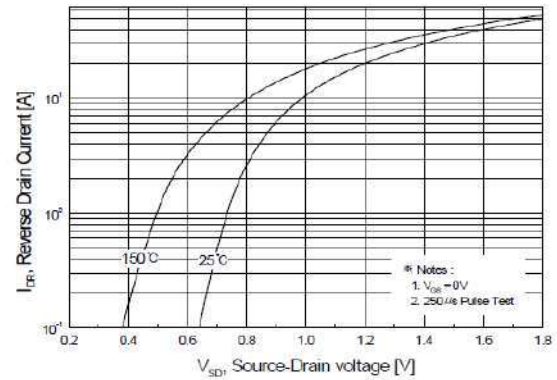


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

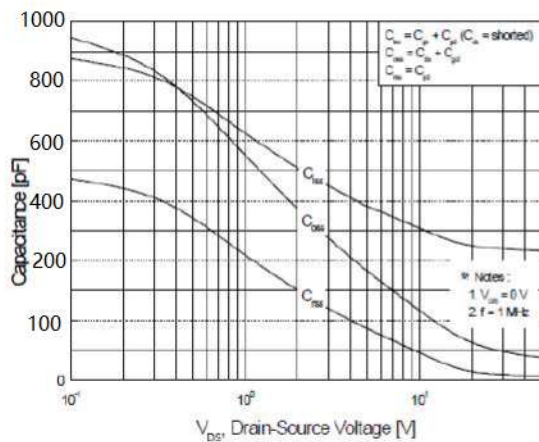


Figure 5. Capacitance Characteristics

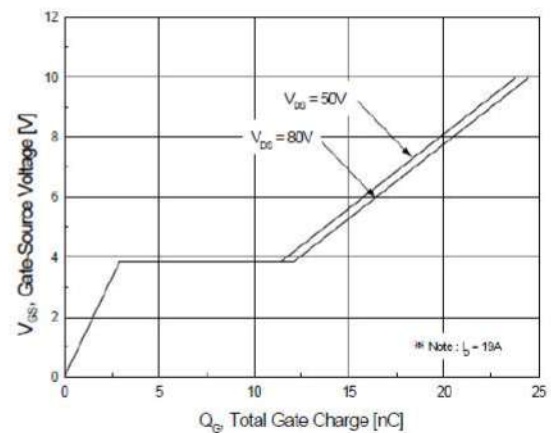


Figure 6. Gate Charge Characteristics

Typical Characteristics:N-channel

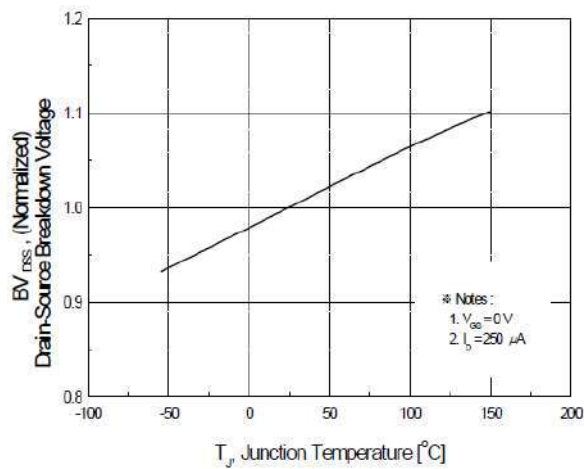


Figure 7. Breakdown Voltage Variation vs. Temperature

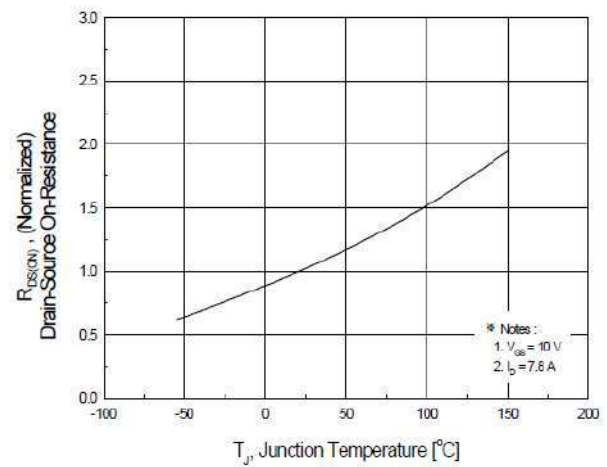


Figure 8. On-Resistance Variation vs. Temperature

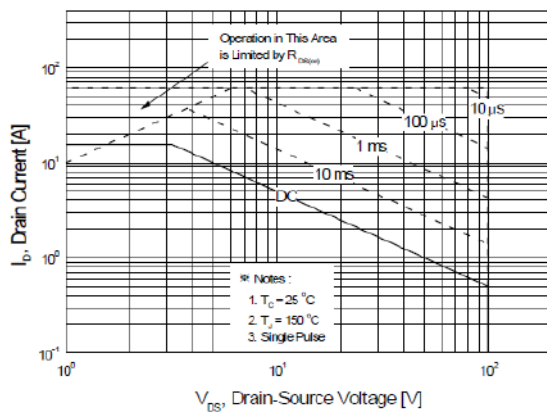


Figure 9. Maximum Safe Operating Area

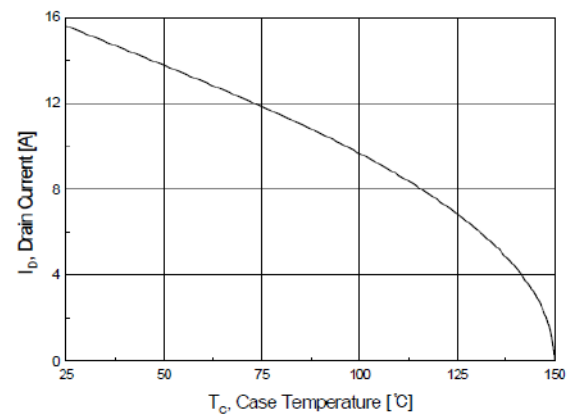


Figure 10. Maximum Drain Current vs. Case Temperature

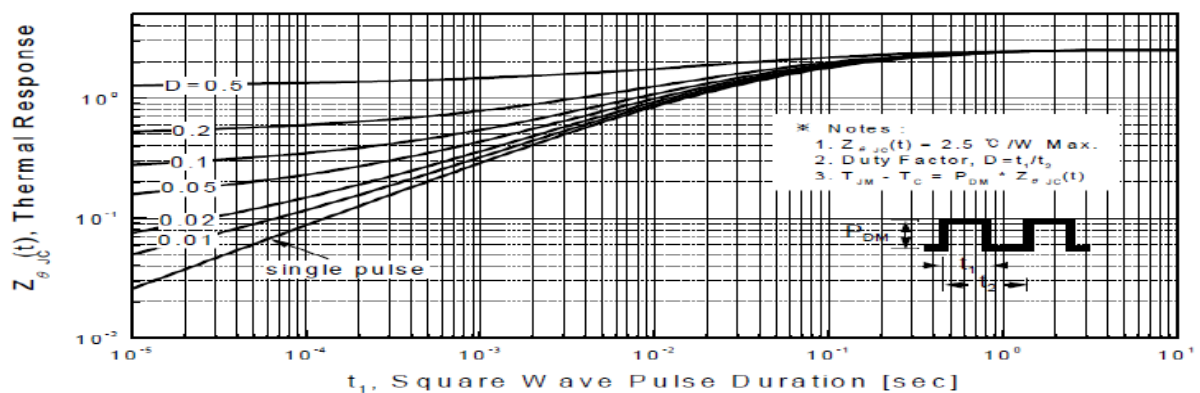


Figure 11. Transient Thermal Response Curve

Typical Characteristics:P-channel

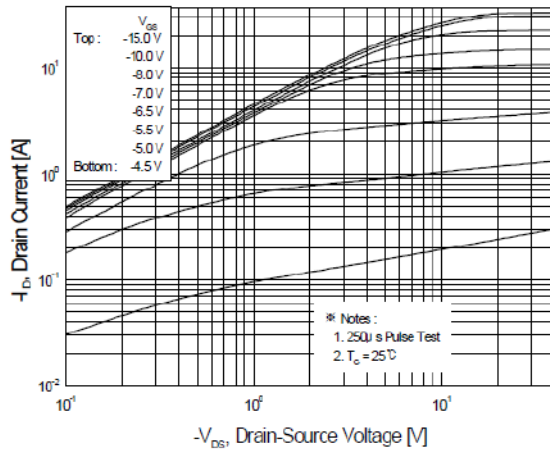


Figure 1. On-Region Characteristics

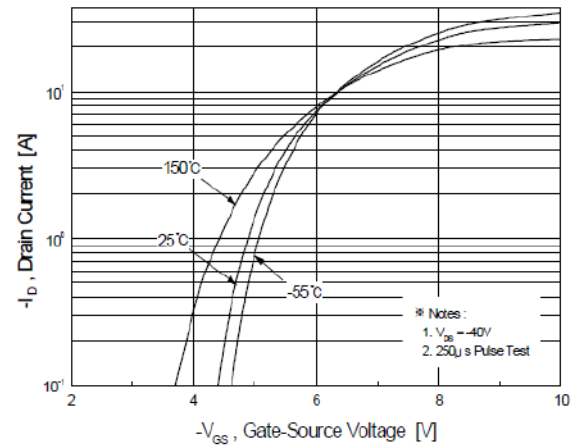


Figure 2. Transfer Characteristics

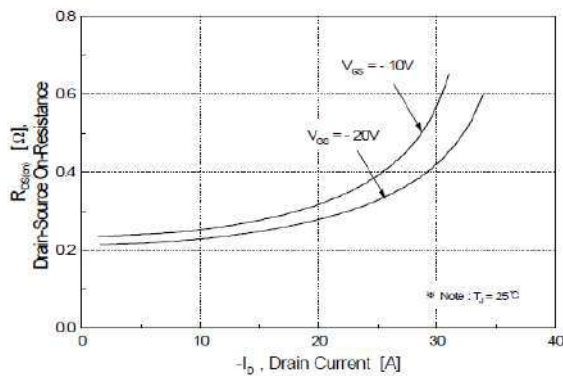


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

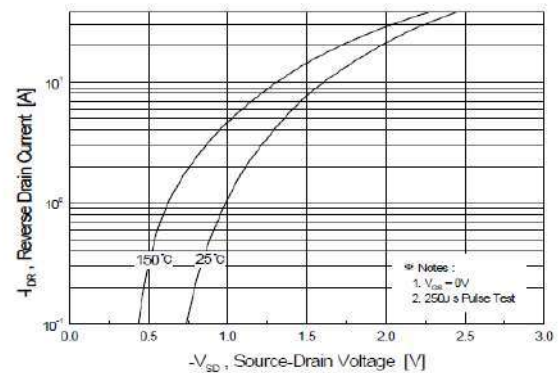


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

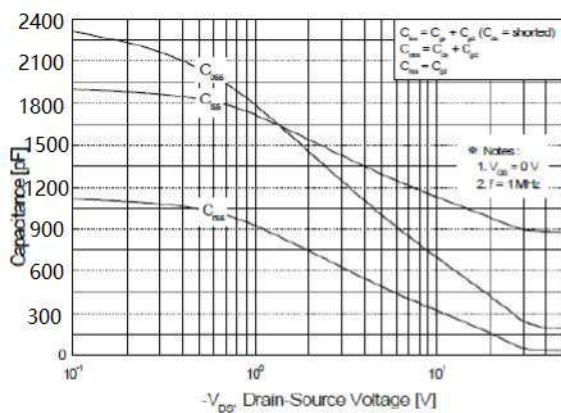


Figure 5. Capacitance Characteristics

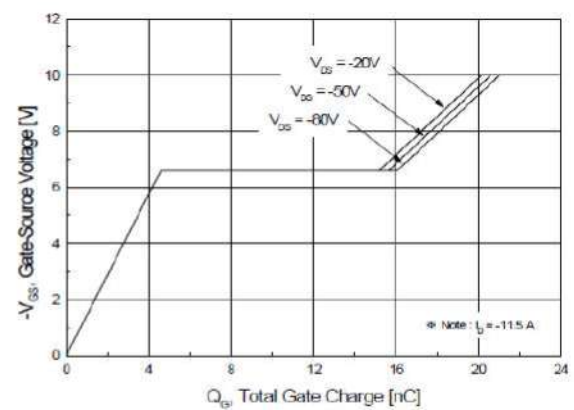


Figure 6. Gate Charge Characteristics

Typical Characteristics:P-channel

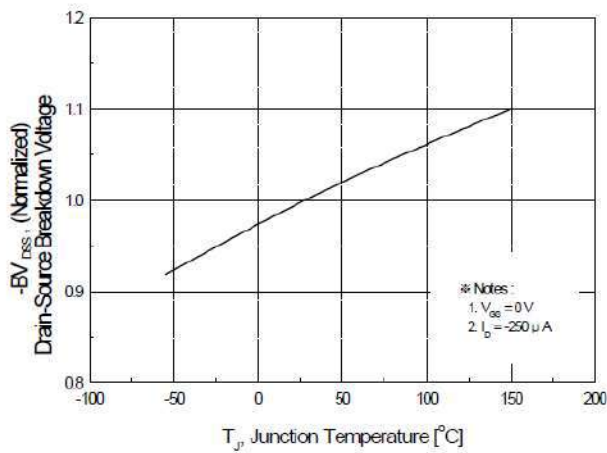


Figure 7. Breakdown Voltage Variation vs. Temperature

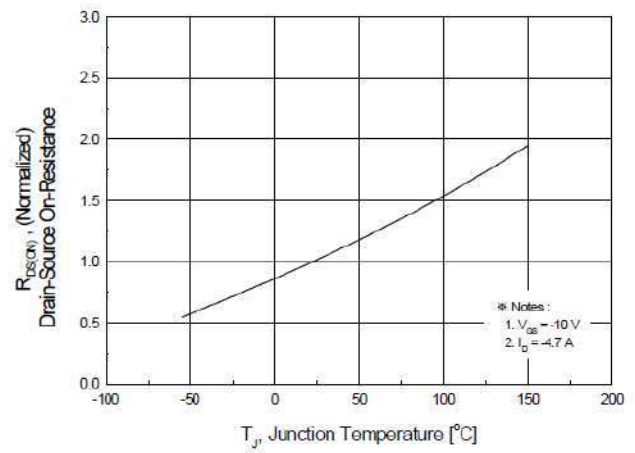


Figure 8. On-Resistance Variation vs. Temperature

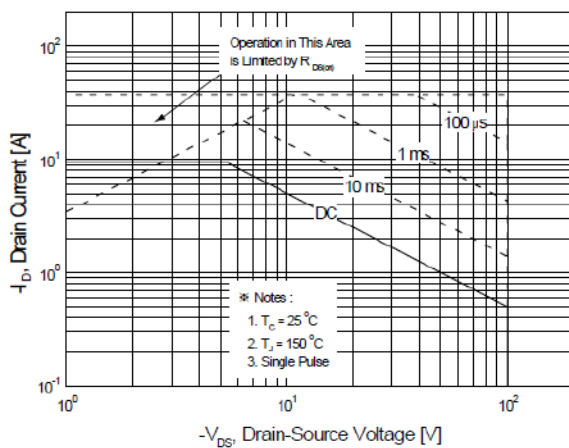


Figure 9. Maximum Safe Operating Area

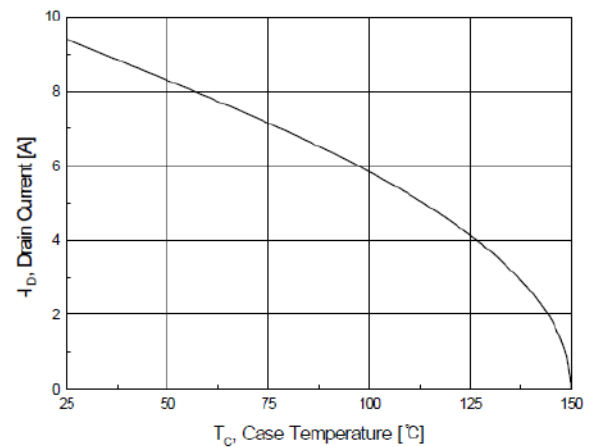


Figure 10. Maximum Drain Current vs. Case Temperature

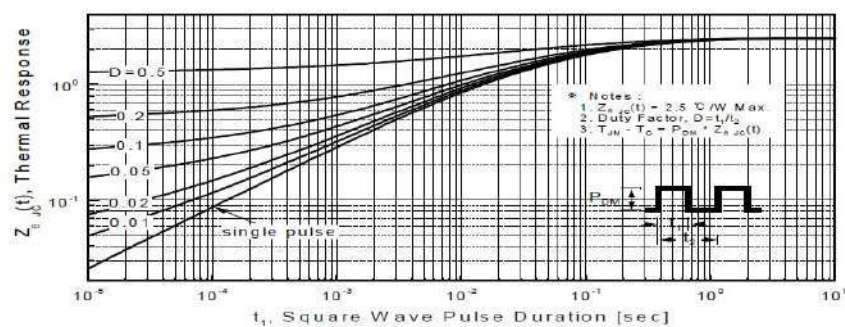
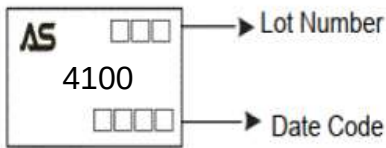


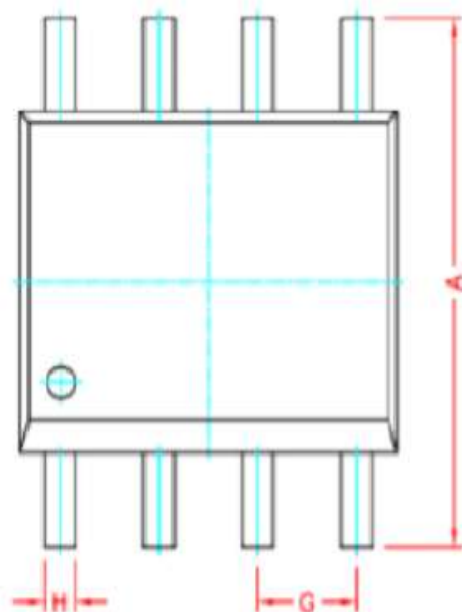
Figure 11. Transient Thermal Response Curve

Ordering and Marking Information

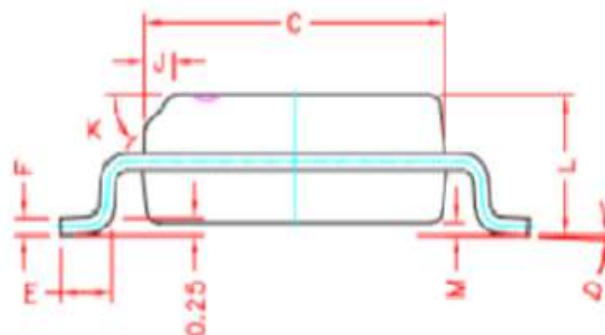
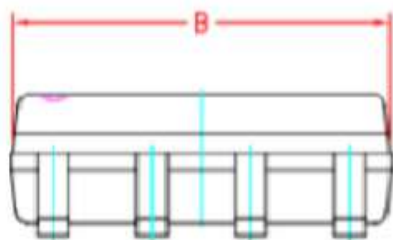
Ordering Device No.	Marking	Package	Packing	Quantity
ASDM4100S-R	4100	SOP-8	Tape&Reel	4000/ Reel

PACKAGE	MARKING
SOP-8	 The diagram shows a rectangular marking area on a component. It contains the 'AS' logo in the top left, the number '4100' in the center, and two sets of boxes for additional information. The top set of four boxes is labeled 'Lot Number' with an arrow, and the bottom set of five boxes is labeled 'Date Code' with an arrow.

SOP-8 PACKAGE IN FORMATION



REF	DIMENSIONS	
	Millimeters	
	Min	Max
A	5.80	6.20
B	4.80	5.10
C	3.80	4.00
D	0°	8°
E	0.40	0.90
F	0.19	0.25
M	0.10	0.25
H	0.35	0.49
L	1.35	1.75
J	0.375 REF	
K	45°	
G	1.27 TYP	



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