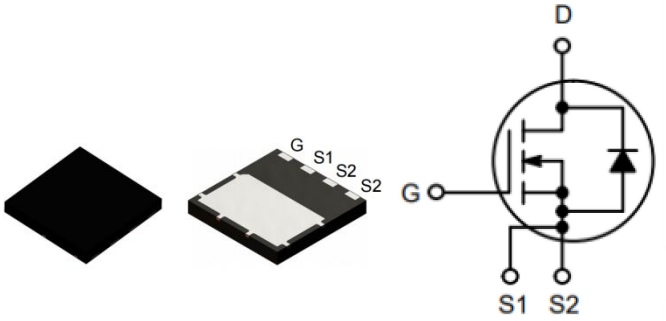
ASMC080T155N1
SiC MOSFET

800V 155mΩ typ. @V_{GS}=18V
Silicon Carbide Power MOSFET
N-Channel Enhancement Mode



Features

- Wide bandgap SiC MOSFET technology
- Low On-Resistance with High Blocking Voltage
- Low Capacitances with High-Speed switching
- Low reverse recovery(Qrr)
- Halogen free, RoHs compliant

Package Parameters

Part Number	Marking	Package
ASMC080T155N1	ASMC080T155N1	DFN8x8

Benefits

- Reduce switching losses
- Increased system Switching Frequency
- Increased power density
- Reduction of heat sink requirements

Applications

- Switch mode power supplies
- Renewable energy
- On Board Charger
- High voltage DC/DC converters

RoHS

Halogen

Package Pin Definitions

- S1- Driver Source
- S2- Power Source
- G- Gate

Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter	Test conditions	Value	Unit	Note
V_{DSmax}	Drain-Source Voltage	V_{GS} = 0V, I_D = 100μA	800	V	
V_{GS}	Gate-Source voltage (transient)	t_p≤500ns, duty cycle ≤1%	-10/+22	V	
V_{GSop}	Recommend Gate-Source Voltage	Static	-4/+18	V	
$V_{GSop,max}$	Maximum recommend Gate-Source Voltage		-5/+20	V	
EAS	Single pulse avalanche energy	V_{DS}=800V, V_{DD}=50V, V_{GS}=15V, L=1mH, T_C=25°C	128	mJ	
I_D	Continuous Drain current [1]	V_{GS} = 18V, T_C = 25°C	28	A	Fig. 14
		V_{GS} = 18V, T_C = 100°C	17		
I_{DM}	Pulsed Drain Current [2]	Pulse with t_p limited by T_{jmax}	70	A	Fig. 18
P_D	Power Dissipation	T_C = 25°C, Tj = 175°C	133	W	Fig. 16
T_j	Operating junction temperature		-55~150	°C	
T_{stg}	Storage temperature		-55~150	°C	

Thermal Characteristics

Symbol	Parameter	Value			Unit	Note
		Min.	Typ.	Max.		
$R_{th(jc)}$	Thermal resistance from Junction to Case		1.13		℃/W	Fig. 15
$R_{th(ja)}$	Thermal resistance from Junction to Ambient		40		℃/W	

Note:
1) Repetitive Rating: Limited by maximum junction temperature.
2) Pulse Test: Pulse Width ≤ 100μs, Duty Cycle ≤ 1%.

Electrical Characteristics T_j=25°C unless otherwise specified

Static Characteristics

Symbol	Parameter	Test conditions	Value			Unit	Note
			Min.	Typ.	Max.		
$V_{(BR)DSS}$	Drain-Source Breakdown voltage	V_{GS} = 0V, I_D = 100μA	800			V	
$V_{GS(th)}$	Gate Threshold voltage	V_{GS} = V_{DS}, I_D = 4.4mA	2.0	2.7	4.0	V	Fig. 9
		V_{GS} = V_{DS}, I_D = 4.4mA, T_j=175°C		1.8			
I_{GSS}	Gate-Source Leakage current	V_{GS} = 18V, V_{DS} = 0V			250	nA	
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 800V, V_{GS} = 0V, T_j = 25°C		1	50	μA	
$R_{DS(on)}$	Drain-Source On-state Resistance	V_{GS} = 15V, I_D = 5A V_{GS} = 18V, I_D = 5A		190 155	220	mΩ	Fig. 3, 4, 5
		V_{GS} = 15V, I_D = 5A, T_j = 175°C V_{GS} = 18V, I_D = 5A, T_j = 175°C		215 200			
g_{fs}	Transconductance	V_{DS} = 18V, I_D = 5A		5		S	Fig. 6
		V_{DS} = 18V, I_D = 5A, T_j = 175°C		4			

Gate Charge Characteristics

Symbol	Parameter	Test conditions	Value			Unit	Note
			Min.	Typ.	Max.		
Q_{GS}	Gate to Source Charge	V_{DS} = 400V I_D = 5A V_{GS} = -4V/18V		3.7		nC	Fig. 10
Q_{GD}	Gate to Drain Charge			7			
Q_G	Total Gate Charge			17.6			

AC Characteristics (T_j=25°C unless otherwise specified)

Symbol	Parameter	Test conditions	Value			Unit	Note
			Min.	Typ.	Max.		
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 600V f =1 MHz V_{AC} = 25mV		361		pF	Fig. 13
C_{oss}	Output Capacitance			34		pF	
C_{rss}	Reverse Transfer Capacitance			3.5		pF	
$R_{G(int)}$	Internal Gate Resistance	f=1 MHz, V_{AC} = 25mV		3.5		Ω	

Reverse Diode Characteristics (T_j=25°C unless otherwise specified)

Symbol	Parameter	Test conditions	Value			Unit	Note
			Min.	Typ.	Max.		
V_{SD}	Diode Forward Voltage	V_{GS} = -4V, I_{SD} = 2.5A		3.8		V	Fig. 7,8
		V_{GS} = -4V, I_{SD} = 2.5A, T_j = 175°C		3.4			
I_S	Continuous Diode Forward Current	V_{GS} = -4V, T_C = 25°C		25		A	
$I_{S,\ pulse}$	Diode pulse Current	V_{GS} = -4V, pulse width t_p limited by T_{jmax}		70		A	

Typical Performance

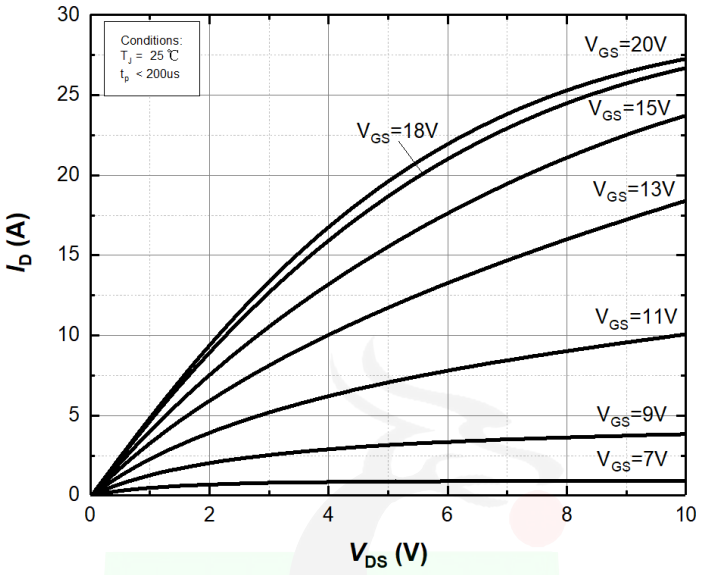


Figure 1. Output characteristics at Tj=25°C

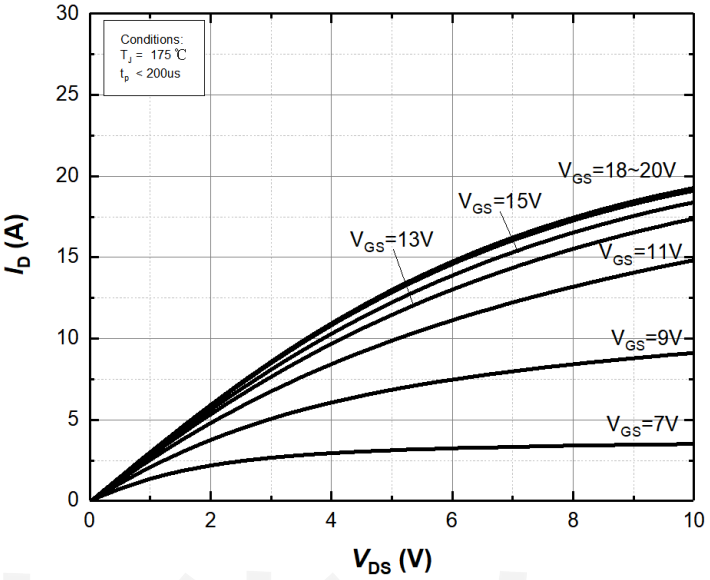


Figure 2. Output characteristics at Tj=175°C

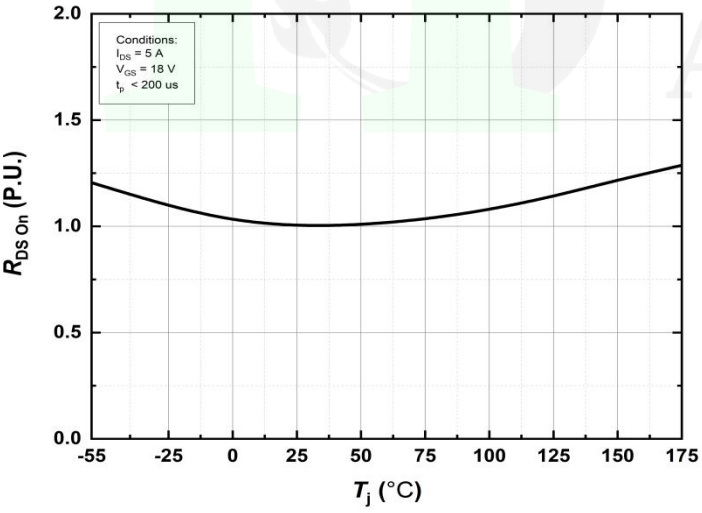


Figure 3. Normalized On-Resistance vs. Temperature

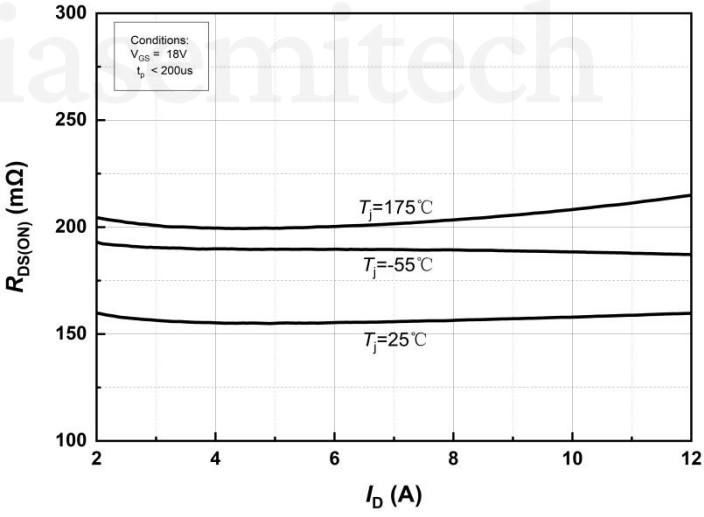


Figure 4. On-Resistance vs. Drain current for Various Temperature

Typical Performance

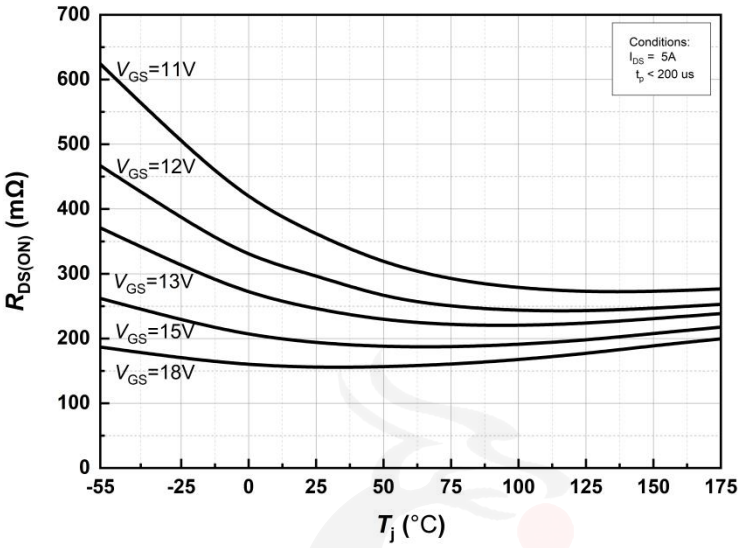


Figure 5. On-Resistance vs. Temperature for Various Gate Voltage

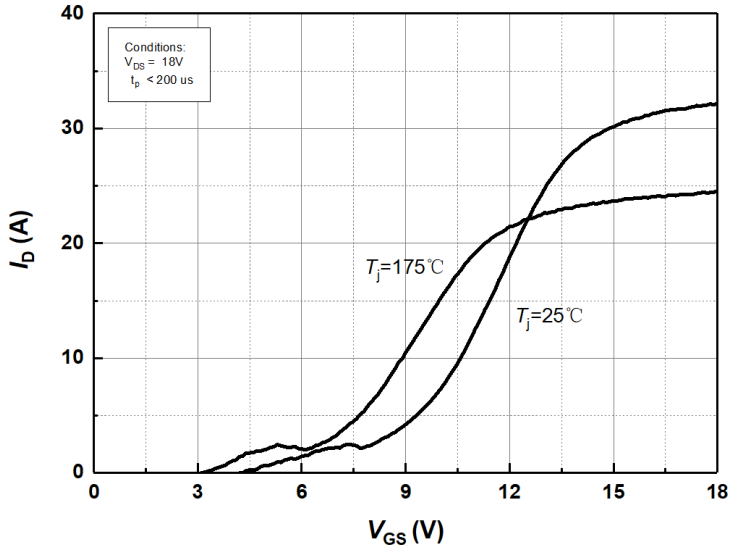


Figure 6. Transfer Characteristics for Various Junction Temperatures

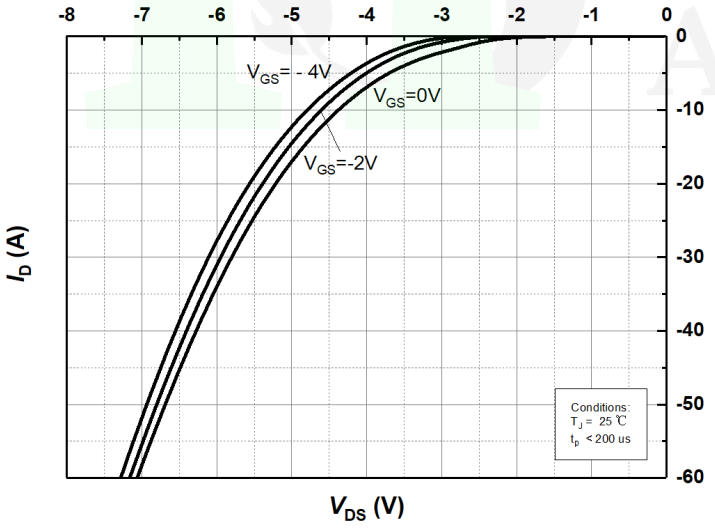


Figure 7. Body Diode Characteristics at Tj=25°C

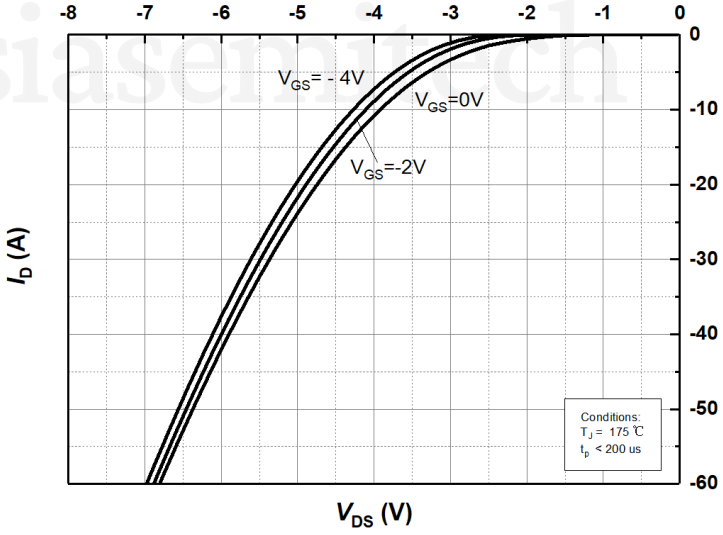


Figure 8. Body Diode Characteristics at Tj=175°C

Typical Performance

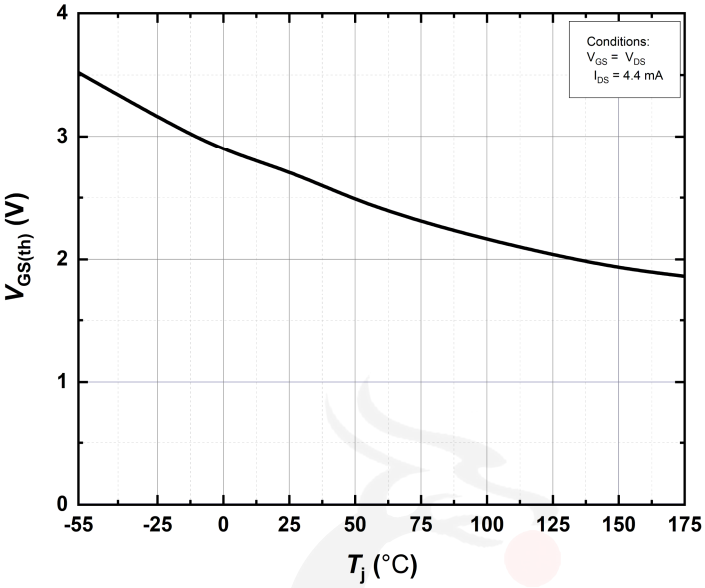


Figure 9. Threshold Voltage vs. Temperature

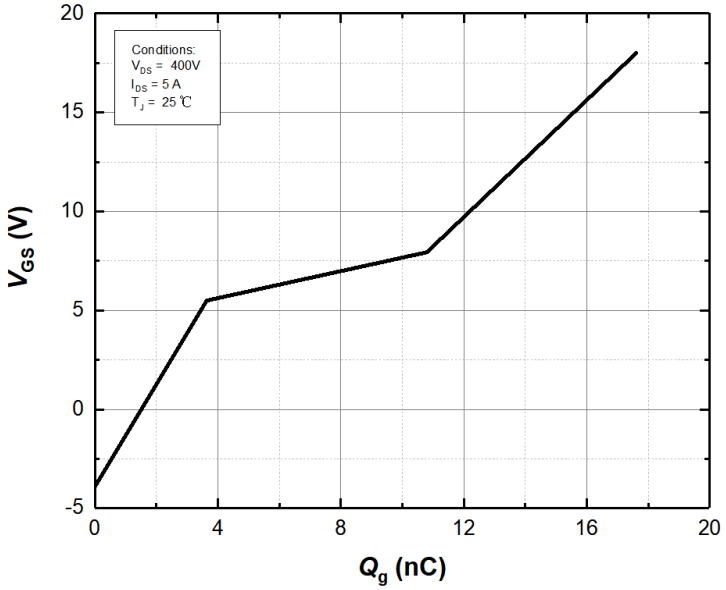


Figure 10 Gate Charge Characteristics

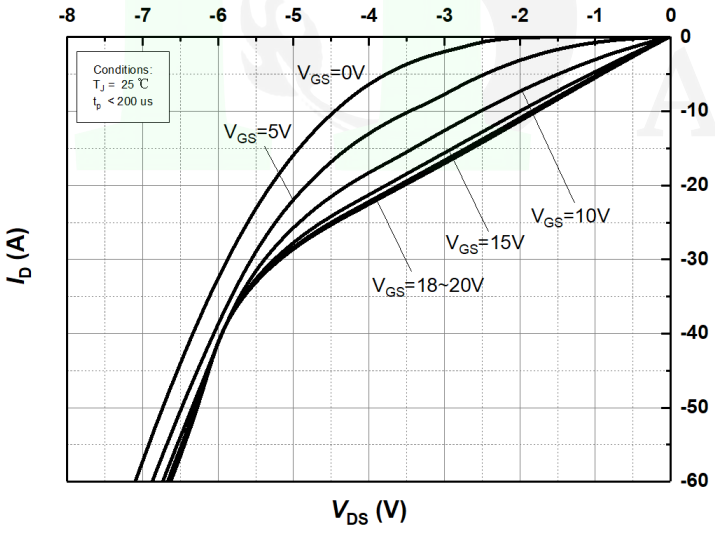


Figure 11. 3rd Quadrant Characteristic at Tj=25°C

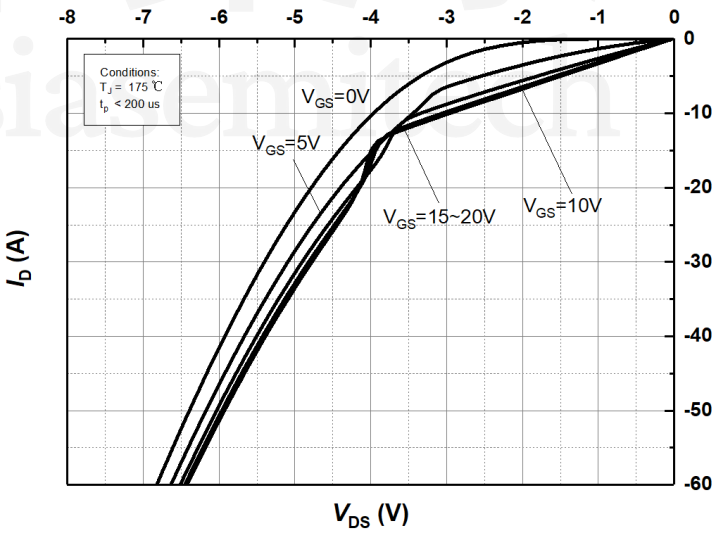


Figure 12. 3rd Quadrant Characteristic at Tj=175°C

Typical Performance

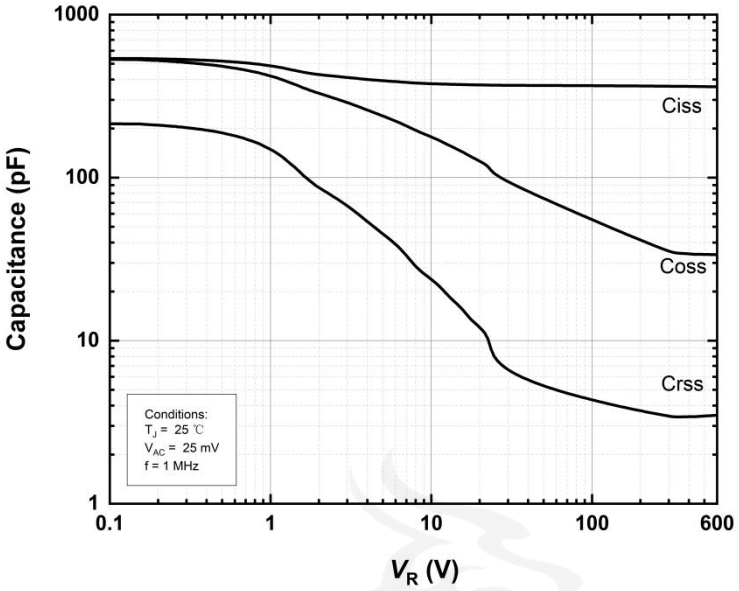


Figure 13. Capacitances vs. Drain-Source Voltage (0 – 1000V)

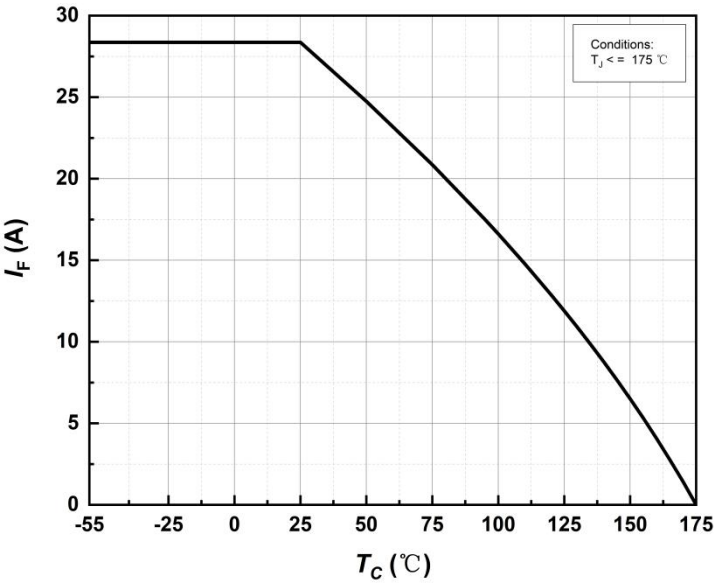


Figure 14. Continuous Drain Current Derating vs Case Temperature

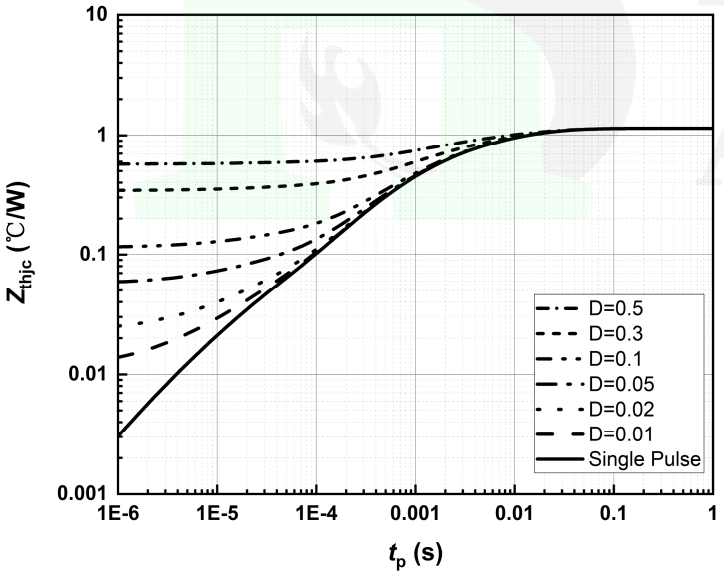


Figure 15.Transient Thermal Impedance (Junction – Case)

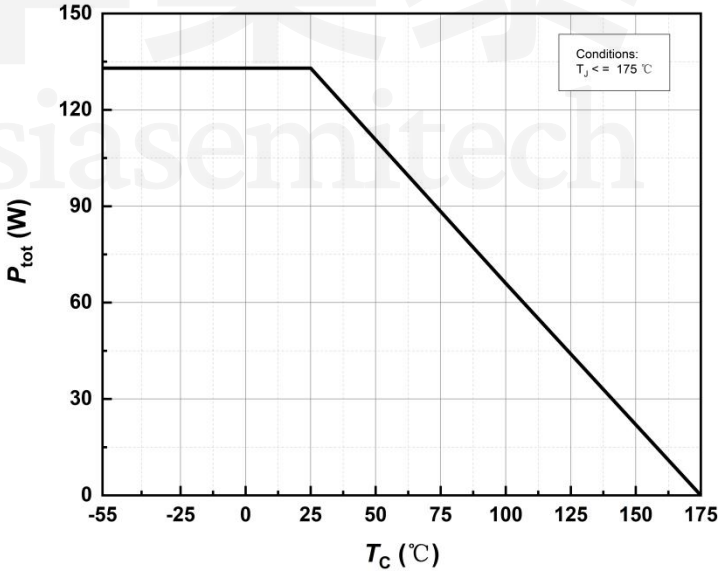


Figure 16. Maximum Power Dissipation Derating vs. Case Temperature

Typical Performance

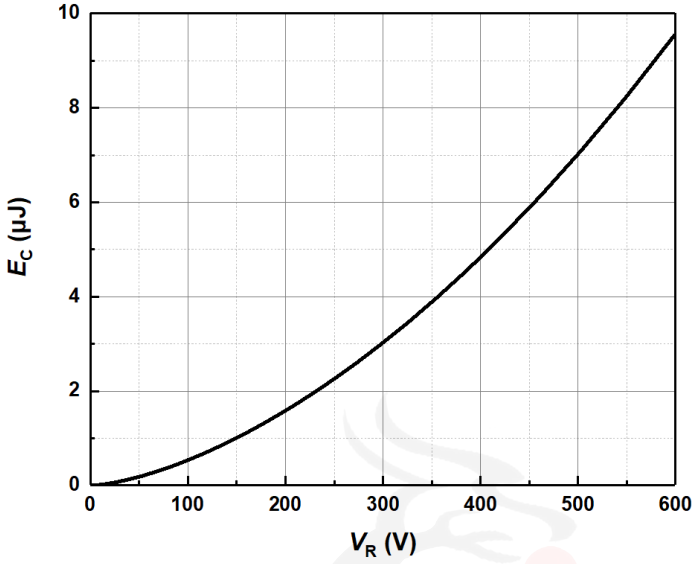


Figure 17. Output Capacitor Stored Energy

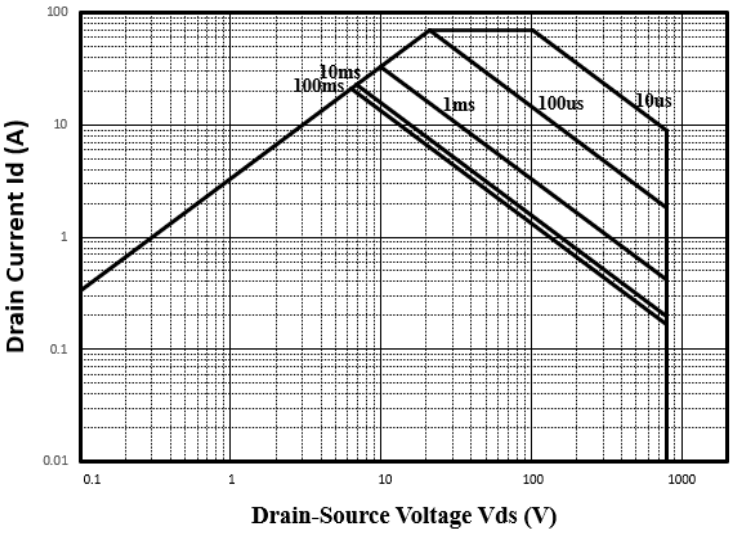
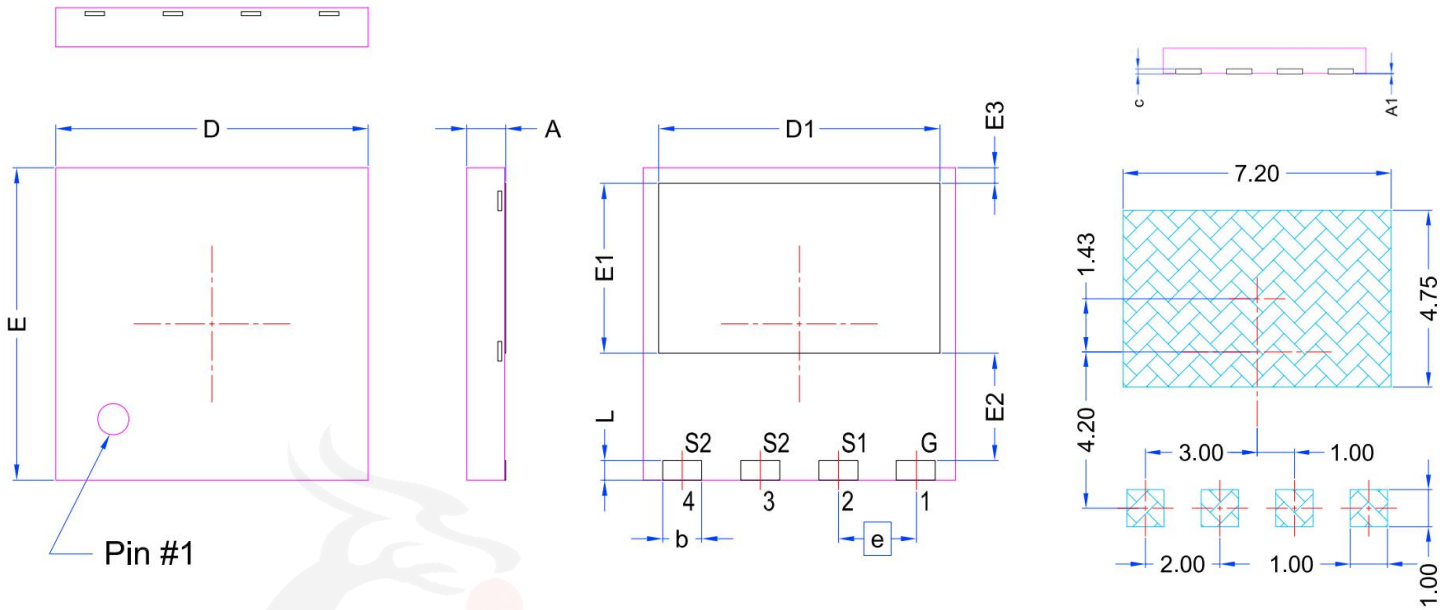


Figure 18. Safe Operating Area

Package Dimensions



SYMBOL	DIMENSIONS		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0.00	---	0.05
b	0.90	1.00	1.10
c	0.10	0.20	0.30
D	7.90	8.00	8.10
D1	7.10	7.20	7.30
E	7.90	8.00	8.10
E1	4.25	4.35	4.45
E2	2.65	2.75	2.85
E3	0.30	0.40	0.50
e	2.00 BSC		
L	0.40	0.50	0.60

Revision History

Document Version	Date of Release	Description of Changes
Rev 0.4	2026-02-05	Update the datasheet.

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