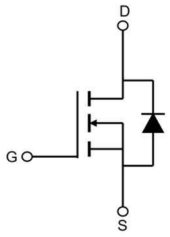
APG016N10TH

N-Channel Enhancement Mosfet

DATA SHEET

Features

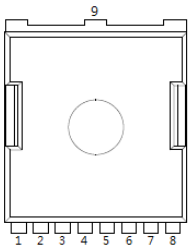
- 100V,367A
  $R_{DS(ON)}$ <1.6mΩ @V_{GS}=10V TYP: 1.2mΩ
- Excellent RDS(ON) and Low Gate Charge
- 100% UIS Tested
- 100% ΔVds Tested
- Halogen-free; RoHS-compliant



Schematic Diagram

Applications

- Power appliances
- BMS appliances
- High power inverter system
- Light electric vehicles



TOLL-8L

1	Gate(G)
2,3,4,5,6,7,8	Source(S)
9	Drain(D)

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G016N10TH	APG016N10TH	TOLL-8L	-	-	2000

ABSOLUTE MAXIMUM RATINGS (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (Tc =25℃) (1)	I_D	367	A
Pulsed Drain Current (1)	I_{DM}	1468	A
Single Pulsed Avalanche Energy (V_{DD} =50V,L=1.0mH) (2)	E_{AS}	1838	mJ
Drain Power Dissipation	P_D	357	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.35	℃/W
Thermal Resistance- Junction to Ambient(3)	$R_{\theta JA}$	34	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS(T_J=25℃ unless otherwise noted)

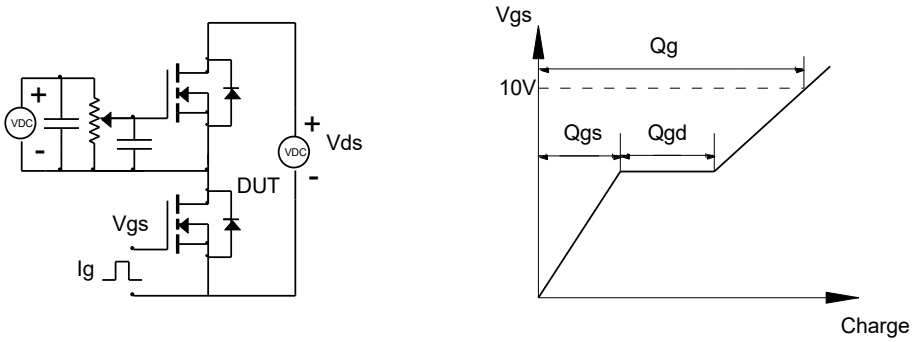
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	100	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =80V, V_{GS} = 0V	-	-	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V	-	-	±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2.0	2.8	4.0	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =20A	-	1.2	1.6	mΩ
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =50V, V_{GS} =0V, f =1.0MHz	-	12667	-	pF
Output Capacitance	C_{oss}		-	4368	-	
Reverse Transfer Capacitance	C_{rss}		-	76	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=50V, I_D=20A, R_G=3.0Ω,,V_G=10V	-	37	-	ns
Turn-on rise time	t_r		-	44	-	
Turn-off delay time	$t_{d(off)}$		-	115	-	
Turn-off fall time	t_f		-	59	-	
Total Gate Charge	Qg	V_{DS}=50V, I_D=20A, V_{GS}=10V	-	178	-	nC
Gate-Source Charge	Qgs		-	61	-	
Gate-Drain Charge	Qgd		-	31	-	
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	T_J=25℃, V_{GS} =0V, I_S=20A	-	-	1.2	V
Diode Forward current	I_S	T_C=25℃	-	-	367	A
Body Diode Reverse Recovery Time	trr	T_J=25℃， IF=20A,di/dt=100A/us		120		ns
Body Diode Reverse Recovery Charge	Qrr	T_J=25℃， IF=20A,di/dt=100A/us		325		uc

Notes:

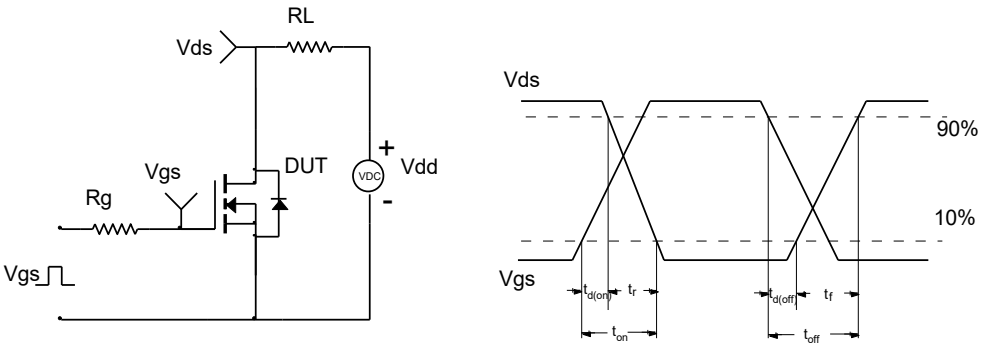
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting T_J=25C, V_{DD}=50V, V_{GS}=10V, R_G=25ohm, L=3mH, I_{AS}=35A.
3. $R_{\theta JA}$ is measured with the device mounted on a $1inch^2$ pad of 2oz copper FR4 PCB.
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Test Circuit

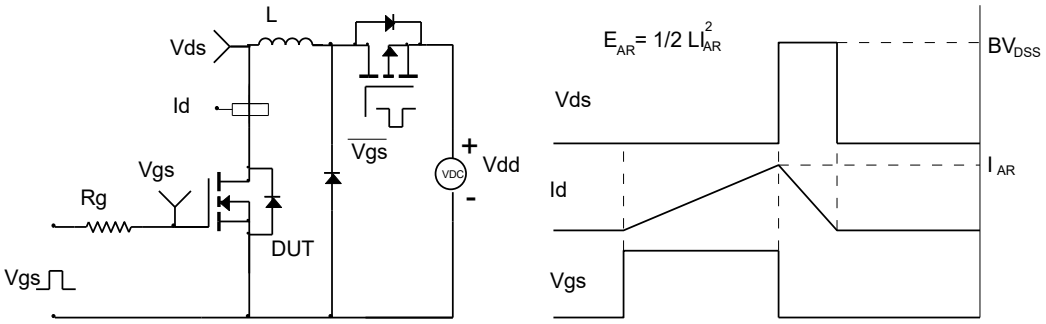
Gate Charge Test Circuit & Waveform



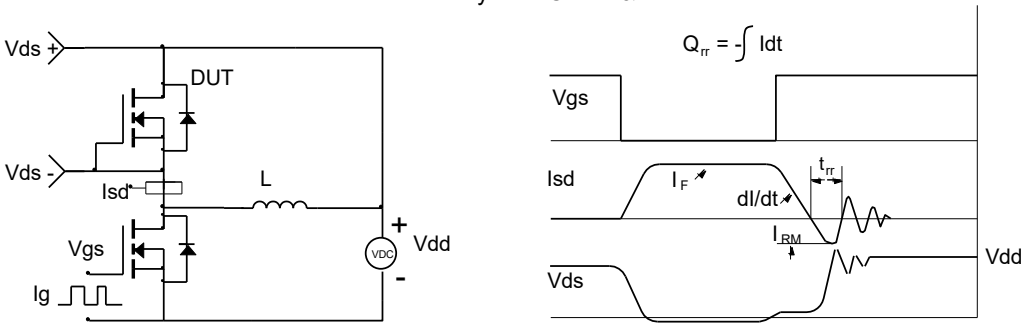
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Performance Characteristics

Figure 1: Output Characteristics

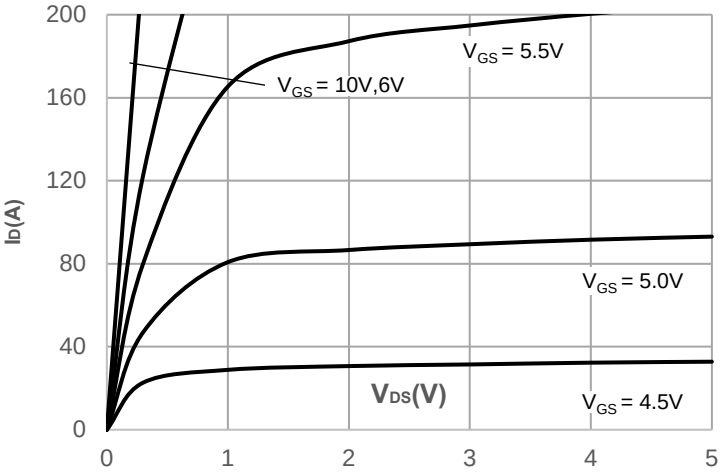


Figure 2: Typical Transfer Characteristics

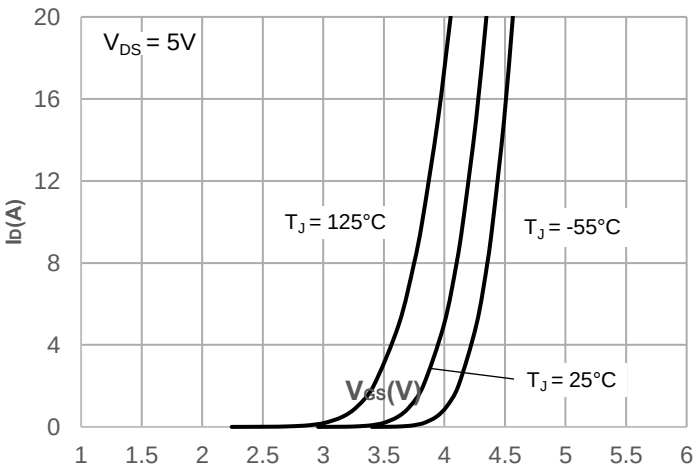


Figure 3: On-resistance vs. Drain Current

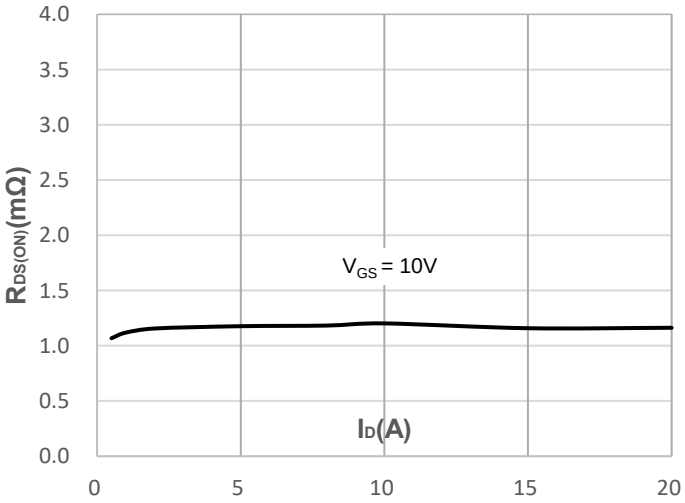


Figure 4: Body Diode Characteristics

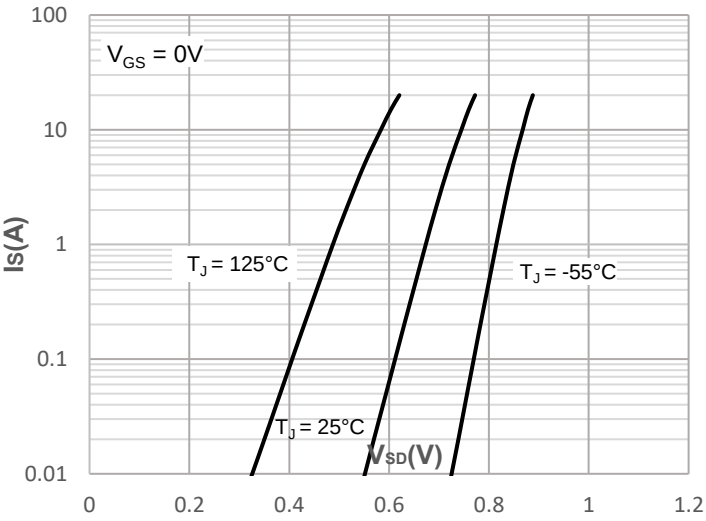


Figure 5: Gate Charge Characteristics

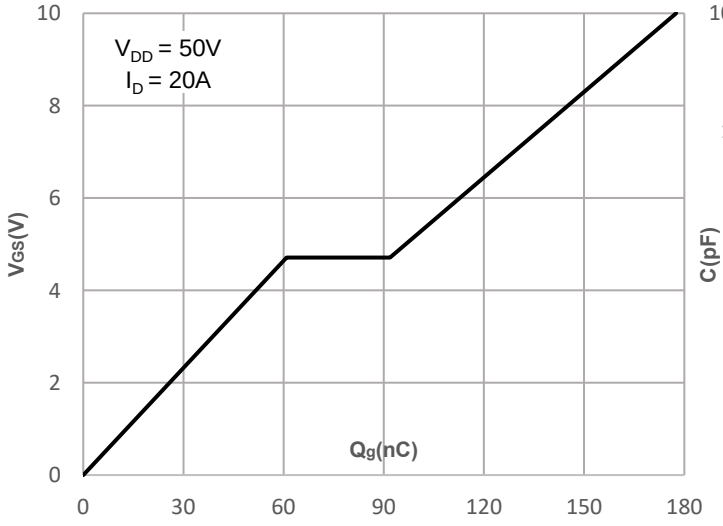
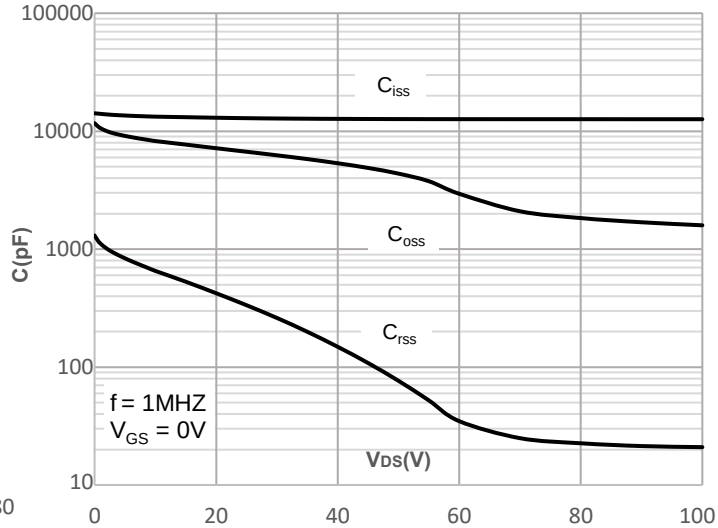


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

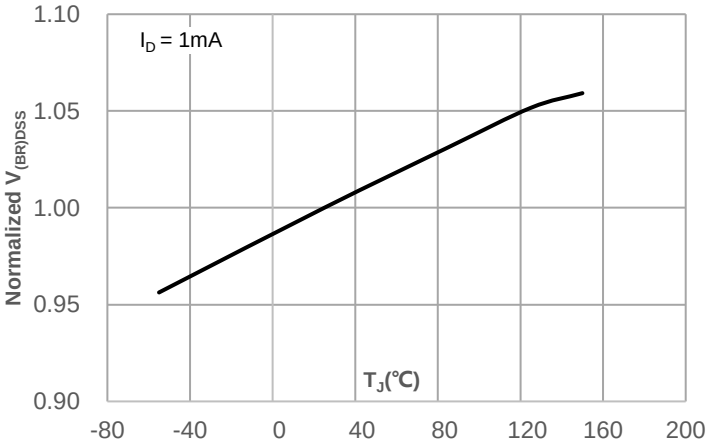


Figure 8: Normalized on Resistance vs. Junction Temperature

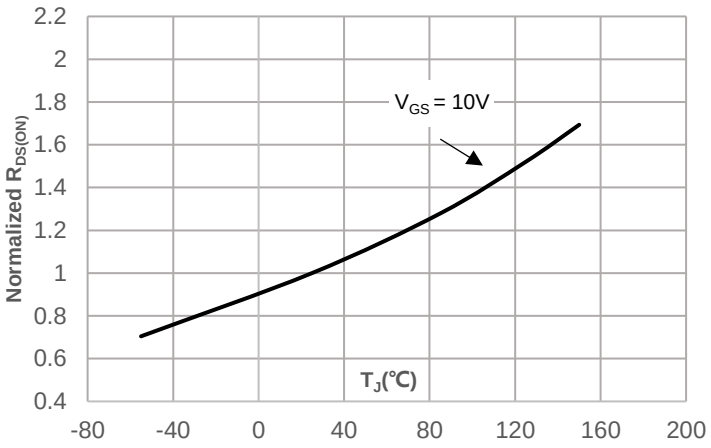


Figure 9: Normalized Threshold Voltage vs. Junction Temperature

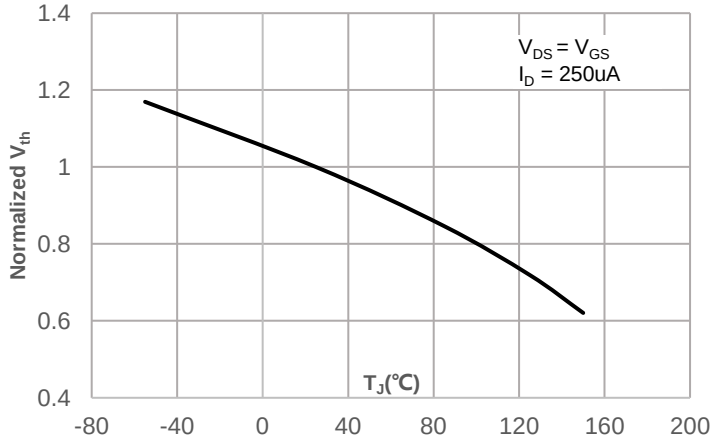


Figure 10: $R_{DS(ON)}$ vs. V_{GS}

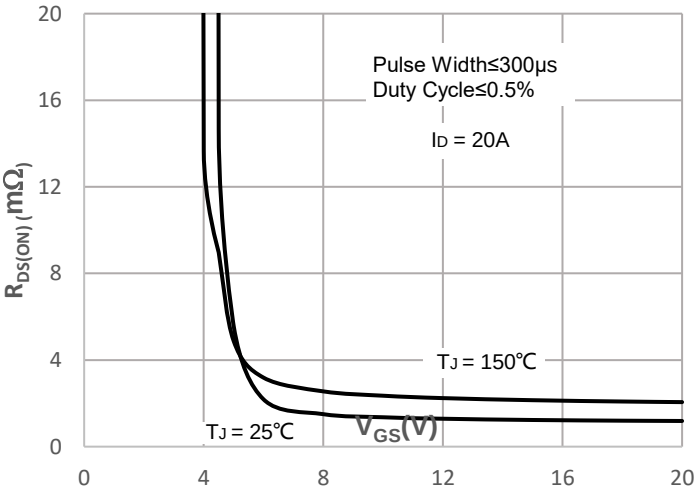


Figure 11: Power De-rating

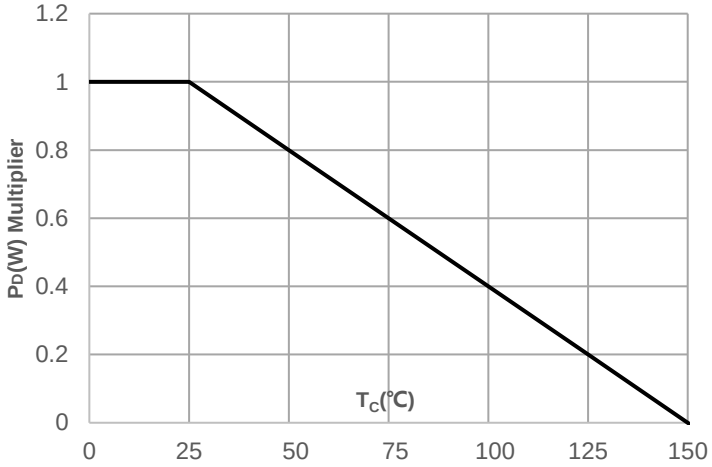
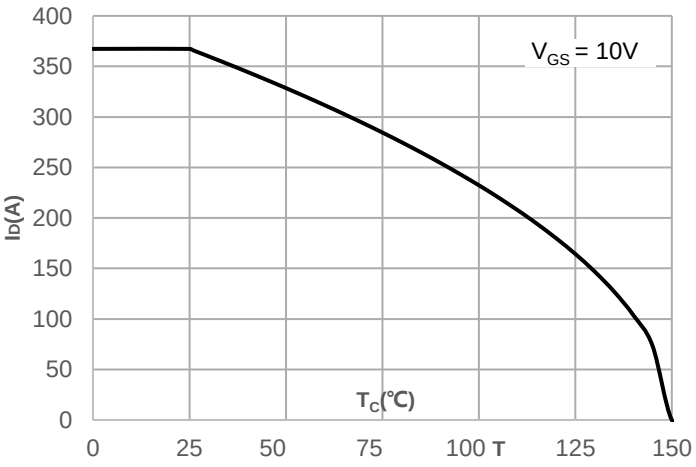


Figure 12: Current De-rating



Typical Performance Characteristics

Figure 13: Maximum Safe Operating Area

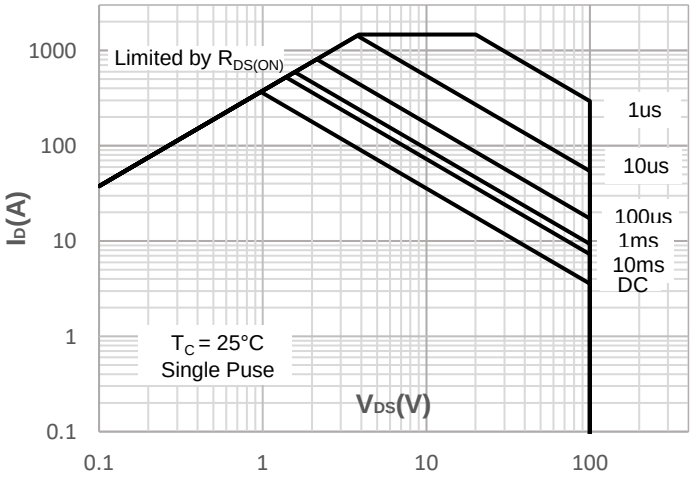
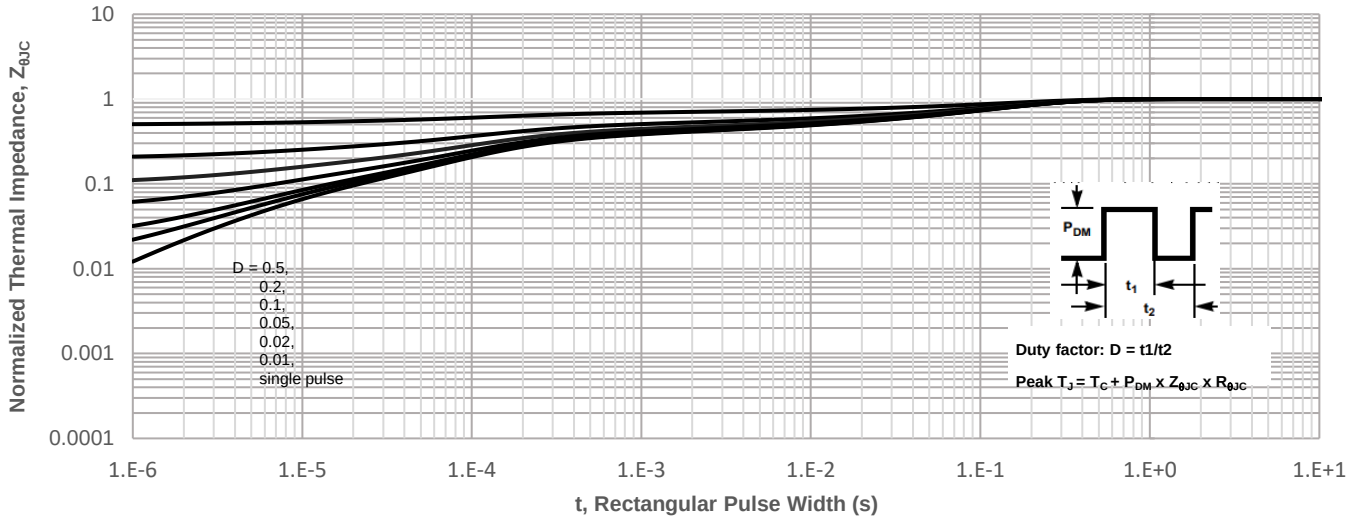
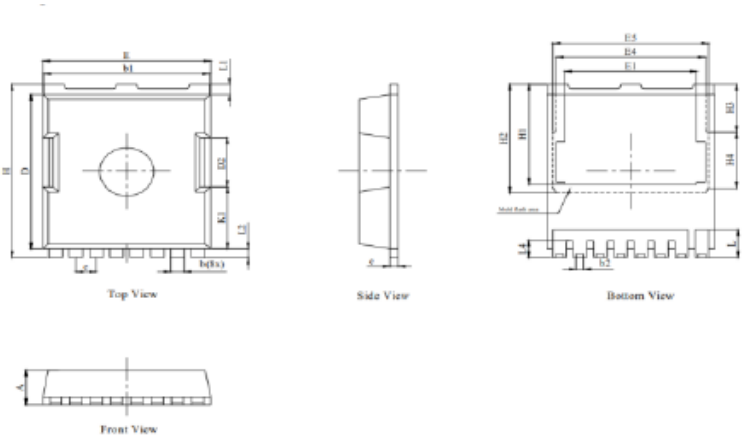


Figure 14: Normalized Maximum Transient Thermal Impedance



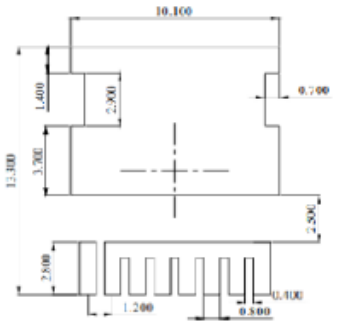
Package Dimensions

TOLL-8L



DIM.	MILLIMETER		
	MIN	NOM	MAX
A	2.20	2.30	2.50
b	0.70	0.80	0.90
bl	9.70	9.80	9.90
b2	0.42	0.46	0.50
C	0.40	0.50	0.65
D	10.28	10.38	10.58
D2		3.30	
E	9.70	9.90	10.10
E1		7.80	
E4		8.80	
E5		9.20	
e		1.20(BSC)	
H	11.48	11.68	11.88
Hl	6.55	6.75	6.85
H2		7.30	
H3		3.20	
H4		3.80	
K1		4.18	
L	1.70	1.90	2.10
L1		0.70	
L2		0.60	
L4	1.00	1.15	1.30

Recommended Soldering Footprint



Revision History

Revision	Release	Remark
V1.0	2024/07/25	Initial Release

Disclaimer

The information given in this document describes the independent performance of the product,but similar performance is not guaranteed under other working conditions,and cannot be guaranteed when installed with other products or equipment.To achieve the required performance of the product in actual scenarios,the customer should conduct a complete application test to assess the functionality of the product.

Allpower assumes no responsibility for equipment failures result from using products at values that exceed the ratings,operating conditions,or other parameters listed in the product specifications.

The product described in this specification is not applicable for aerospace or other applications which requires high reliability.Customers using or selling these products for use in medical,life-saving,or life-sustaining applications do so at their own risk and agree to fully indemnify.

Due to product or technical improvements,the information described or contained herein may be changed without prior notice.