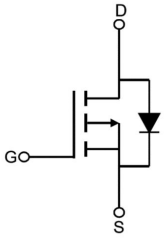
AP19P015P

P-Channel Enhancement Mosfet

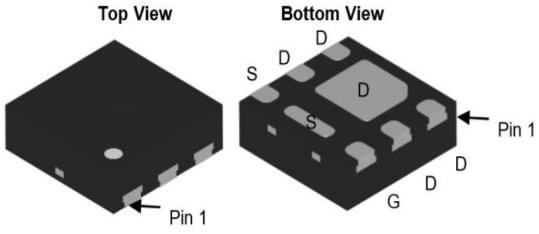
DATA SHEET

Feature

- -15V,-13A
  $R_{DS(ON)}$ <12mΩ @V_{GS}=-4.5V TYP=9.8 mΩ
  $R_{DS(ON)}$ <19mΩ @V_{GS}=-2.5V TYP=14 mΩ
- Good stability and uniformity
- 100% avalanche tested
- Excellent package for good heat dissipation



Schematic Diagram



DFN2X2

Application

- Interfacing Switching
- Load Switching
- Power management

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
19P015P	AP19P015P	DFN2X2		-	3000

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-15	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current (T_C =25℃)	I_D	-13	A
Continuous Drain Current (T_C=100℃)	I_D	-8.2	A
Pulsed Drain Current	I_{DM}	-52	A
Power Dissipation	P_D	5.0	W
Thermal Resistance from Junction to Case(4)	$R_{\theta JC}$	25	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

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

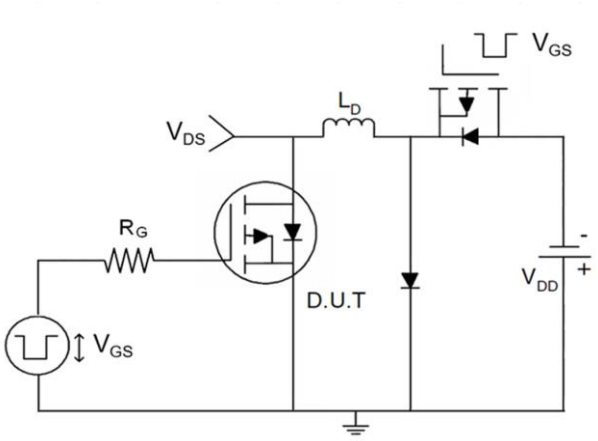
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-15	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-15V, V_{GS} = 0V	-	-	-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±12V,V_{DS} = 0V	-	-	±100	nA
Gate threshold voltage(3)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-0.5	-0.7	-1.0	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS} =-4.5V, I_D =-5A	-	9.8	12	mΩ
		V_{GS} =-2.5V, I_D =-4A	-	14	19	
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =-6V, V_{GS} =0V, f =1MHz	-	1940	-	pF
Output Capacitance	C_{oss}		-	387	-	
Reverse Transfer Capacitance	C_{rss}		-	347	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=-6V, RL_G=0.9Ω, V_{GS}=-4.5V, R_G=6Ω	-	24	-	ns
Turn-on rise time	t_r		-	101.5	-	
Turn-off delay time	$t_{d(off)}$		-	291	-	
Turn-off fall time	t_f		-	157	-	
Total Gate Charge	Qg	VDS=-6V, ID=-7A, VGS=-4.5V	-	19	-	nC
Gate-Source Charge	Qgs		-	9	-	
Gate-Drain Charge	Qgd		-	4.5	-	
Source-Drain Diode characteristics						
Diode Forward voltage(3)	V_{DS}	V_{GS} =0V, I_S=-20A	-	-	-0.7	V
Diode Forward current(4)	I_S		-	-	-13	A

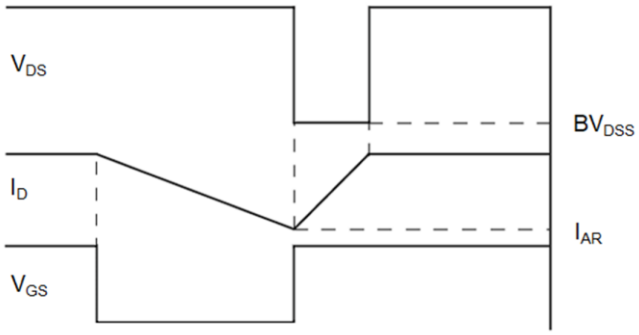
Notes:

1. Repetitive Rating: pulse width limited by maximum junction temperature
2. Pulse Test: pulse width≤300μs, duty cycle≤2%
3. Surface Mounted on FR4 Board,t≤10 sec

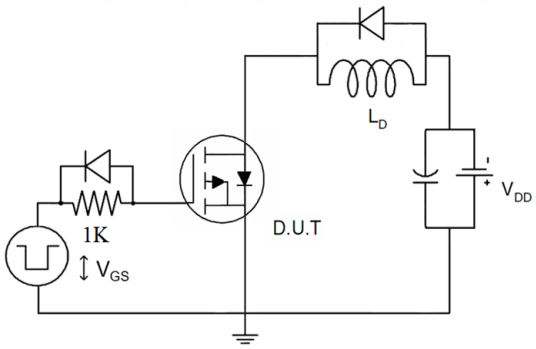
Test Circuit

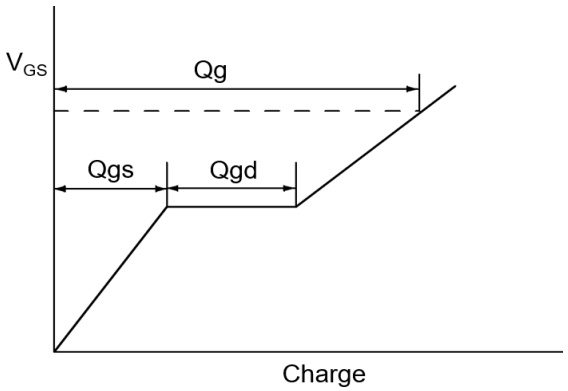
1) E_{AS} Test Circuits



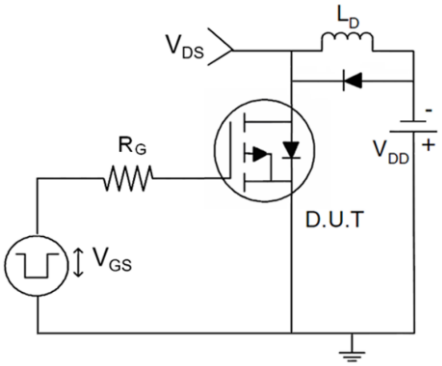


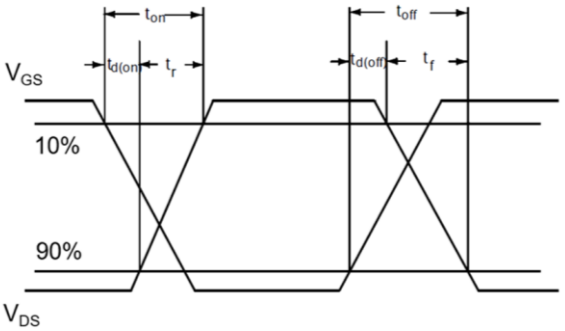
2) Gate Charge Test Circuit





3) Switch Time Test Circuit





Typical Performance Characteristics

Figure 1: On-Region Characteristics

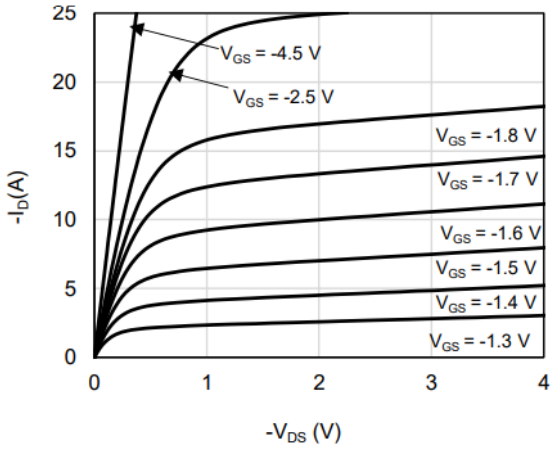


Figure 2: Transfer Characteristics

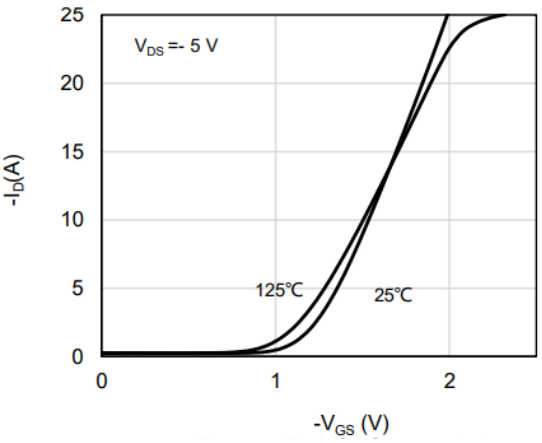


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

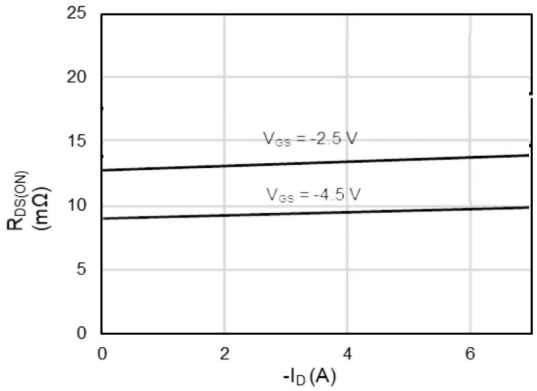


Figure 4: On-Resistance vs. Junction Temperature

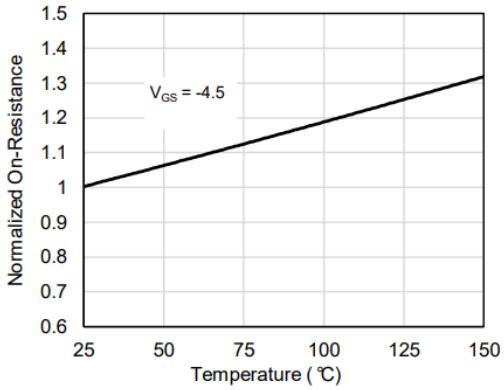


Figure 5: Breakdown Voltage vs. Junction Temperature

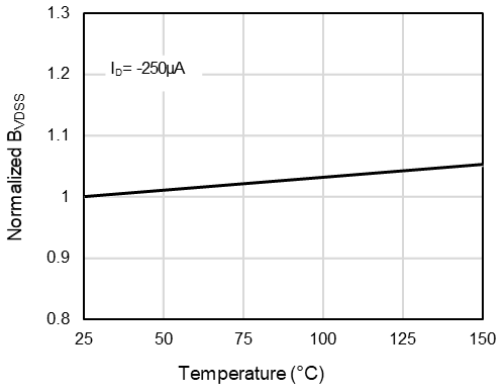
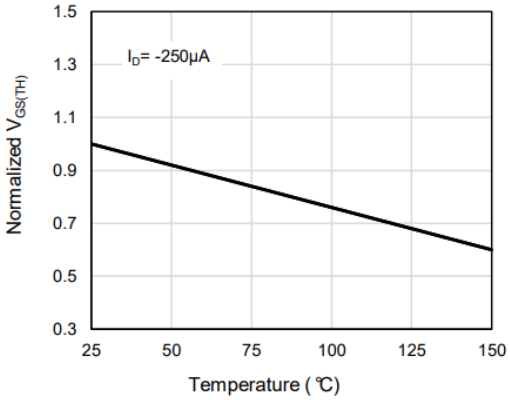


Figure 6: Threshold Voltage vs. Junction Temperature



Typical Performance Characteristics

Figure 7: Body-Diode Characteristics

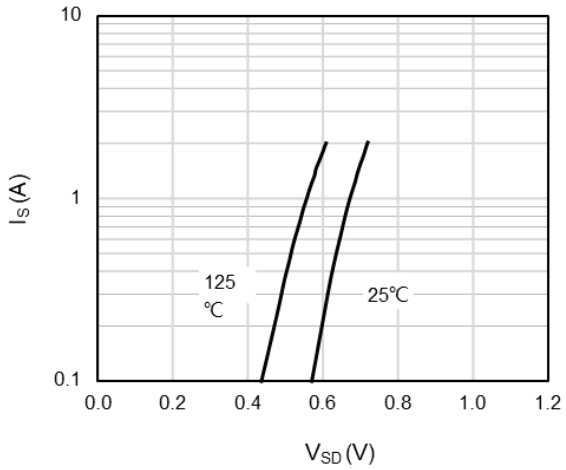


Figure 8: On-Resistance vs. Gate-Source Voltage

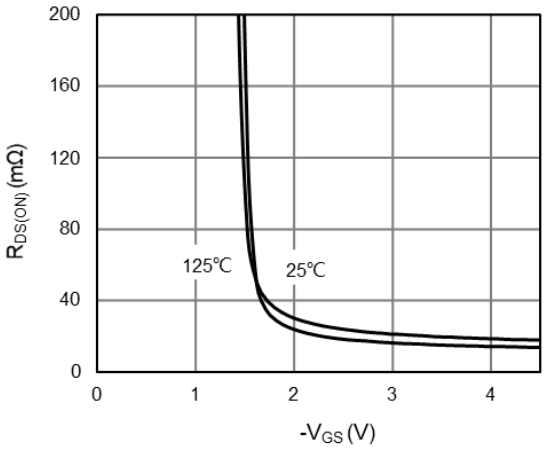


Figure 9: Capacitance Characteristics

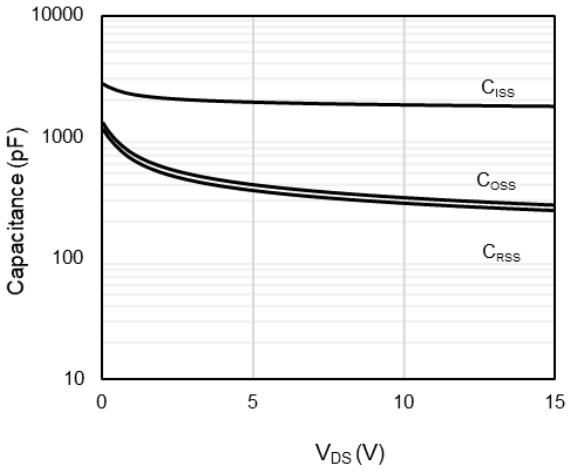


Figure 10: Gate-Charge Characteristics

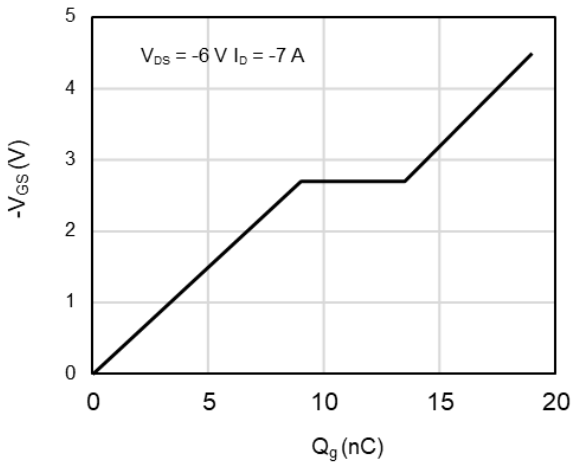


Figure 11: Power De-rating

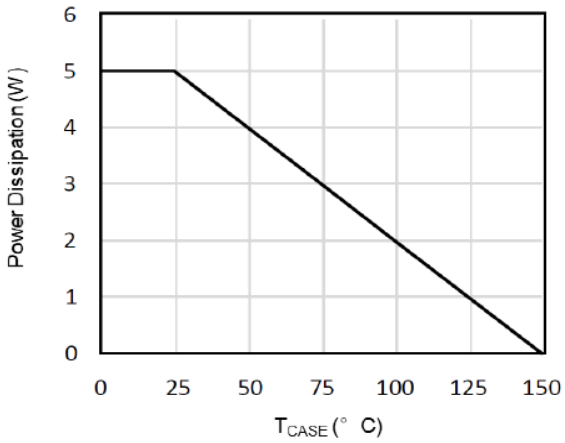
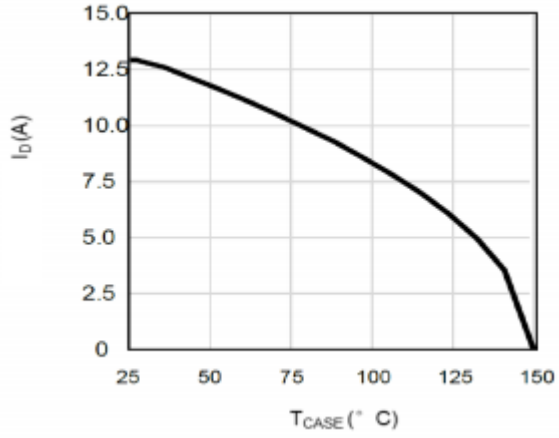


Figure 12: Current De-rating



Typical Performance Characteristics

Figure 13: Normalized Maximum Transient Thermal Impedance

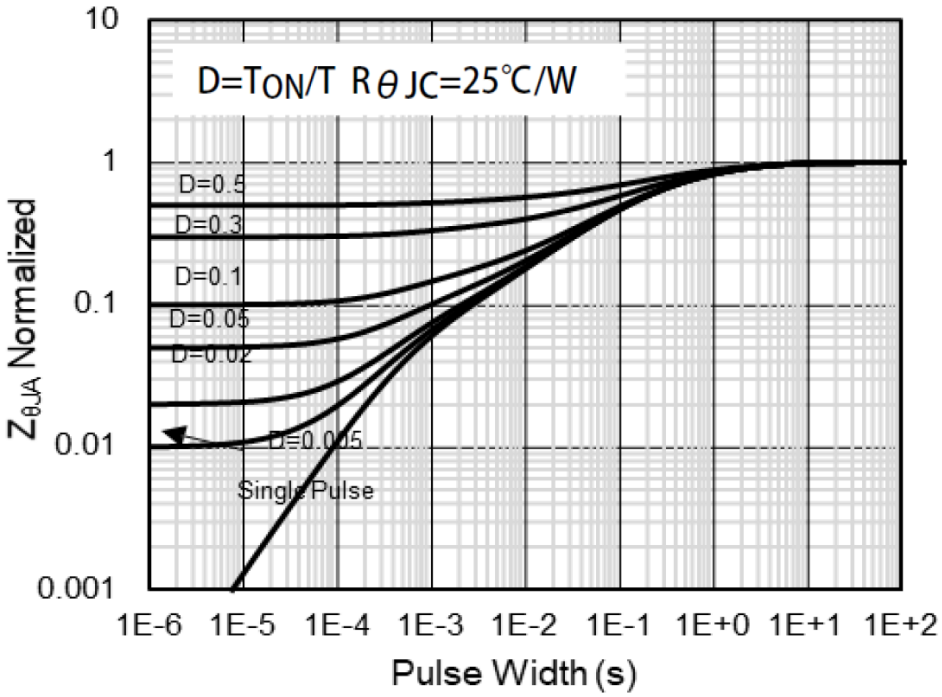
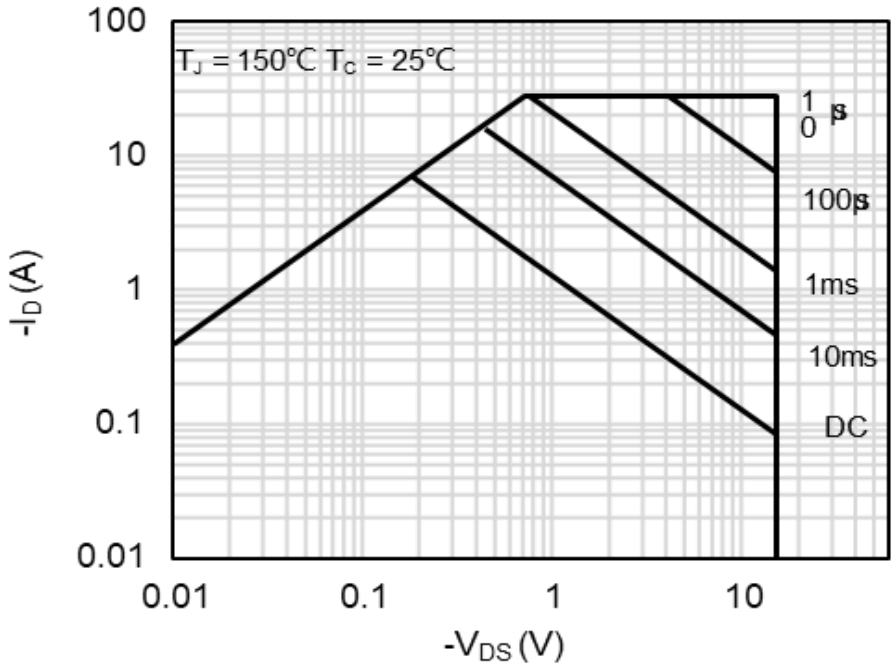
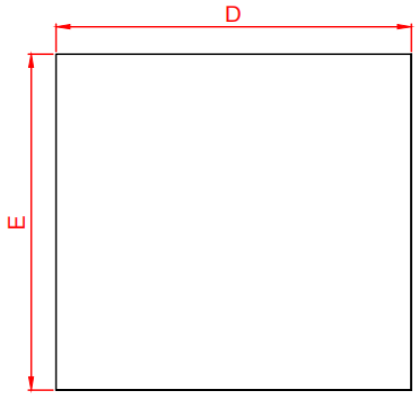


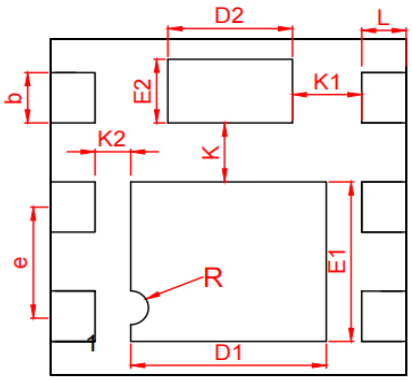
Figure 14: Maximum Forward Biased Safe Operating Area



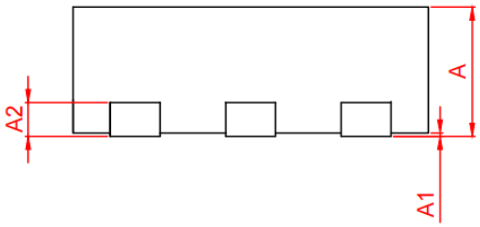
DFN2X2-6L Package Information



TOP VIEW



BOTTOM VIEW



SIDE VIEW

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.70	0.75	0.80
* A1	0.00	0.02	0.05
* b	0.25	0.30	0.35
* A2		0.203 BSC	
* D	1.90	2.00	2.10
* E	1.90	2.00	2.10
* E1	0.90	0.95	1.00
* E2	0.33	0.38	0.43
* D1	1.10	1.15	1.20
* D2	0.65	0.70	0.75
* e		0.65 REF	
* L	0.22	0.25	0.27
* K	0.30	0.35	0.40
* K1	0.35	0.40	0.45
K2	0.18	0.20	0.22

Revision History

Revision	Release	Remark
V1.0	2024/2/27	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.

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