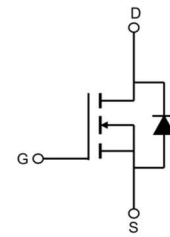


## Features

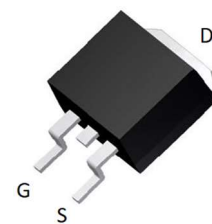
- 60V,25A  
 $R_{DS(ON)} < 35m\Omega @ V_{GS}=10V$  TYP:26m $\Omega$
- Advanced Trench Technology
- High density cell design for ultra low RDS(ON)
- Fully characterized avalanche voltage and current
- Tjmax=175°C
- AEC-Q101 qualified



Schematic Diagram

## Applications

- Power switching application
- Hard switched and high frequency circuits
- Uninterrupted Power Supply (UPS)



TO-263

## Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
6026D-AU	AP6026D-AU	TO-263	-	-	800

## ABSOLUTE MAXIMUM RATINGS (T<sub>J</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	60	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current (T <sub>C</sub> =25°C)	I <sub>D</sub>	25	A
Continuous Drain Current (T <sub>C</sub> =100°C)	I <sub>D</sub>	17	A
Pulsed Drain Current	I <sub>DM</sub>	70	A
Single Pulsed Avalanche Energy <sup>(5)</sup>	E <sub>AS</sub>	100	mJ
Drain Power Dissipation	P <sub>D</sub>	50	W
Thermal Resistance from Junction to Case	R <sub>θJC</sub>	3.0	°C/W
Thermal Resistance- Junction to Ambient	R <sub>θJA</sub>	42	°C/W
Junction Temperature	T <sub>J</sub>	175	°C
Storage Temperature	T <sub>STG</sub>	-55~ +175	°C

**MOSFET ELECTRICAL CHARACTERISTICS(T<sub>J</sub>=25°C unless otherwise noted)**

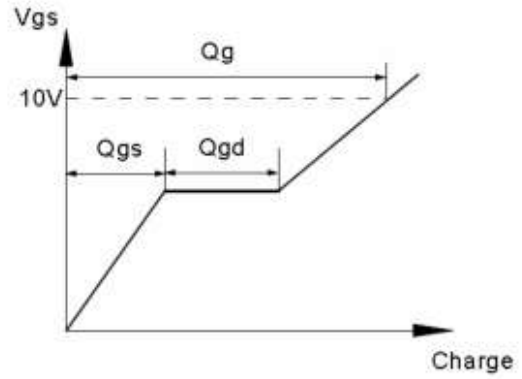
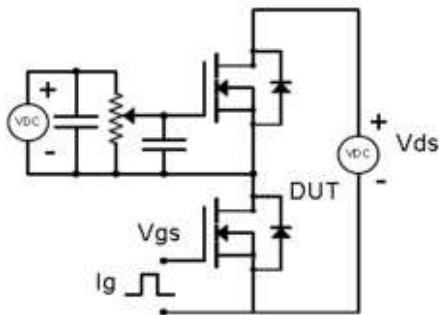
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	60	-	-	V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =60V, V <sub>GS</sub> = 0V	-	-	1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V	-	-	±100	nA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	-	3.0	V
Drain-source on-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =15A	-	26	35	mΩ
Forward Trans conductance	G <sub>fs</sub>	V <sub>GS</sub> =5V, I <sub>D</sub> =4.5A	11			S
<b>Dynamic characteristics</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, f =1.0MHz	-	1890	-	pF
Output Capacitance	C <sub>oss</sub>		-	168	-	
Reverse Transfer Capacitance	C <sub>riss</sub>		-	132	-	
<b>Switching characteristics</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =30V, I <sub>D</sub> =2A, R <sub>G</sub> =3Ω, R <sub>L</sub> =6.7Ω V <sub>G</sub> =10V	-	7	-	ns
Turn-on rise time	t <sub>r</sub>		-	3.2	-	
Turn-off delay time	t <sub>d(off)</sub>		-	19.2	-	
Turn-off fall time	t <sub>f</sub>		-	3.2	-	
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =48V, I <sub>D</sub> =10A, V <sub>GS</sub> =10V	-	49	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	8	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	16	-	
<b>Source-Drain Diode characteristics</b>						
Diode Forward voltage <sup>(3)</sup>	V <sub>SD</sub>	T <sub>C</sub> =25°C, V <sub>GS</sub> =0V, I <sub>S</sub> =10A	-	-	1.2	V
Diode Forward current <sup>(2)</sup>	I <sub>S</sub>	T <sub>C</sub> =25°C	-	-	25	A
Body Diode Reverse Recovery Time	t <sub>rr</sub>	T <sub>C</sub> =25°C, I <sub>F</sub> =10A, di/dt=100A/us		35		ns
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>	T <sub>C</sub> =25°C, I <sub>F</sub> =10A, di/dt=100A/us		43		nc

**Notes:**

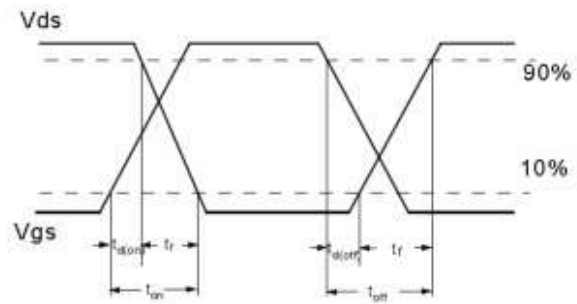
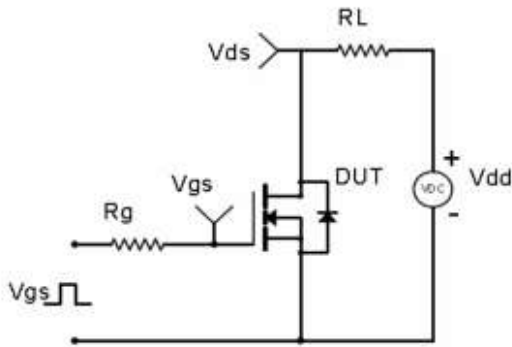
1. Repetitive Rating :Pulse width limited by maximum junction temperature
2. Surface Mounted on FR4 Board ,t≤10 sec
3. Pulse test :Pulse Width≤300 us ,Duty Cycle≤2%
4. Guaranteed by design ,not subject to production
5. EAS condition :T<sub>J</sub>=25°C,V<sub>DD</sub>=30V,V<sub>G</sub>=10V,L=0.5mH IAS=20A ,R<sub>G</sub>=25Ω

**Test Circuit & Waveform**

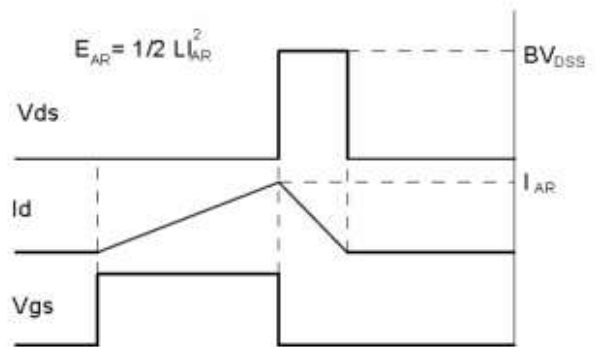
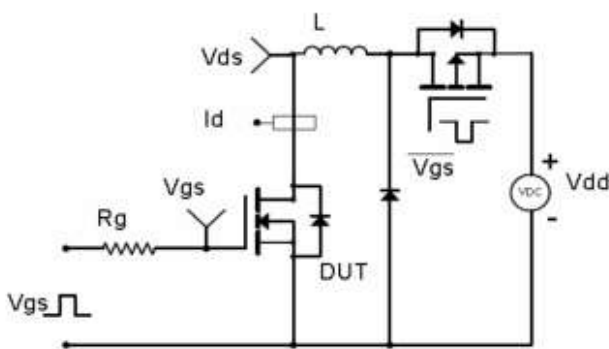
Gate Charge Test Circuit & Waveform



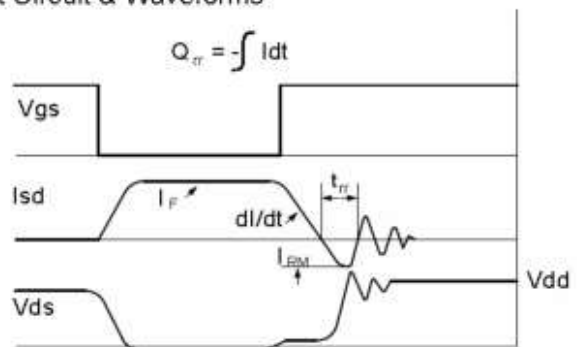
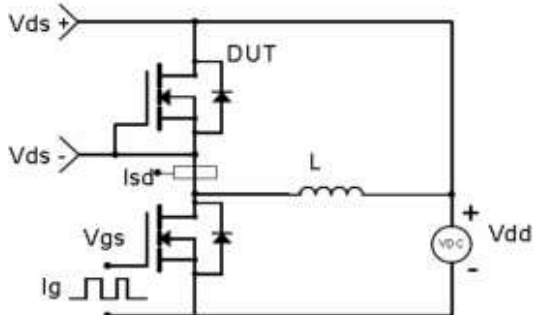
Resistive Switching Test Circuit & Waveforms



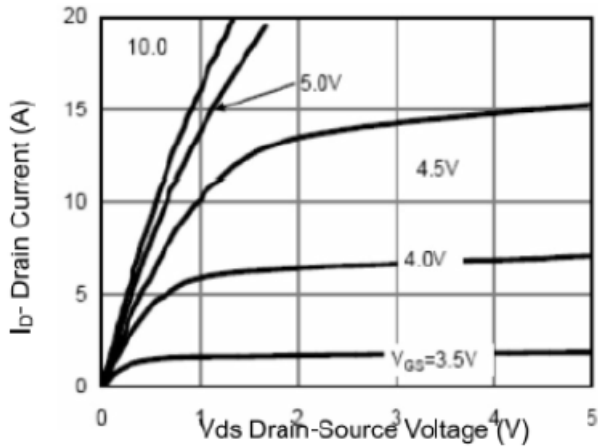
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



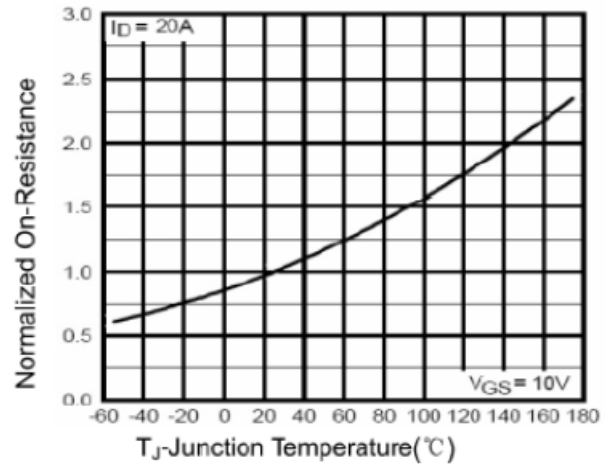
Diode Recovery Test Circuit & Waveforms



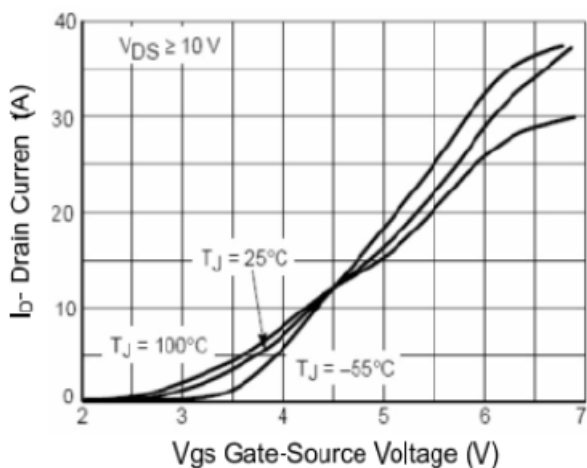
**Typical Performance Characteristics**



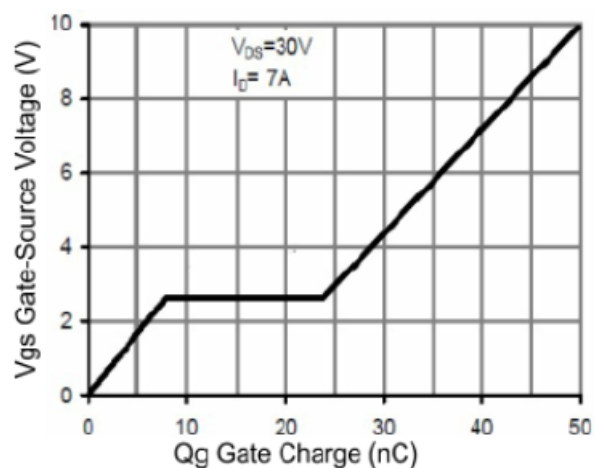
**Figure 1 Output Characteristics**



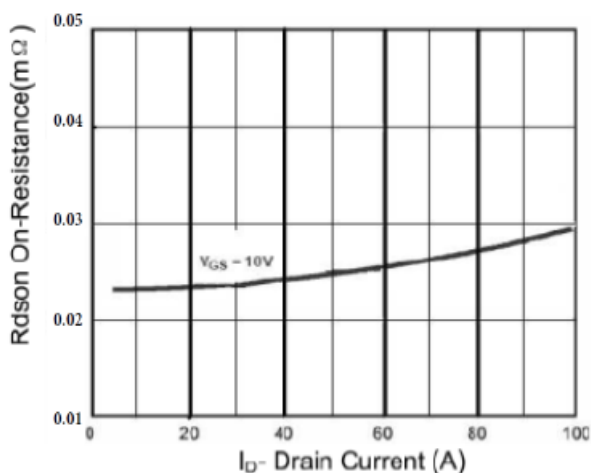
**Figure 4 Rdson-Junction Temperature**



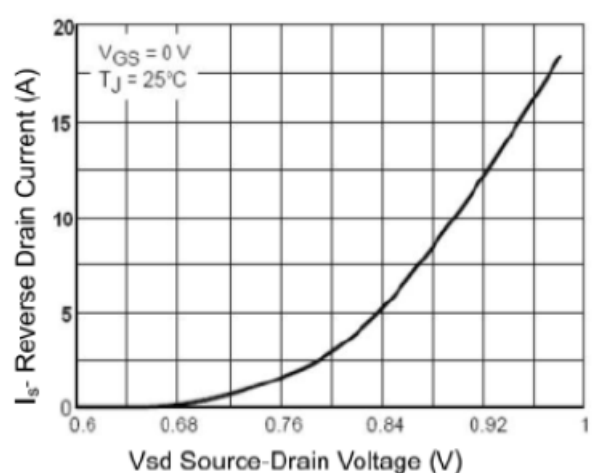
**Figure 2 Transfer Characteristics**



**Figure 5 Gate Charge**

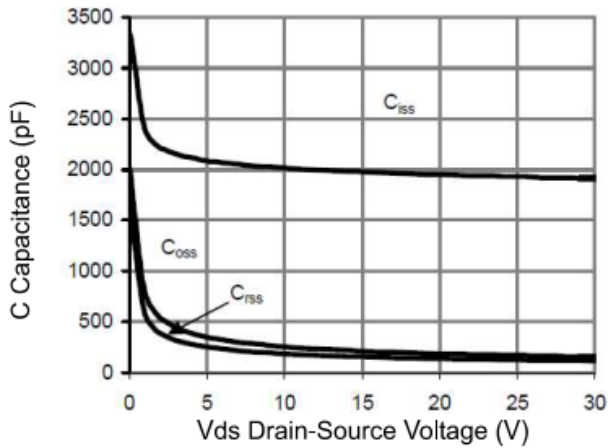


**Figure 3 Rdson- Drain Current**

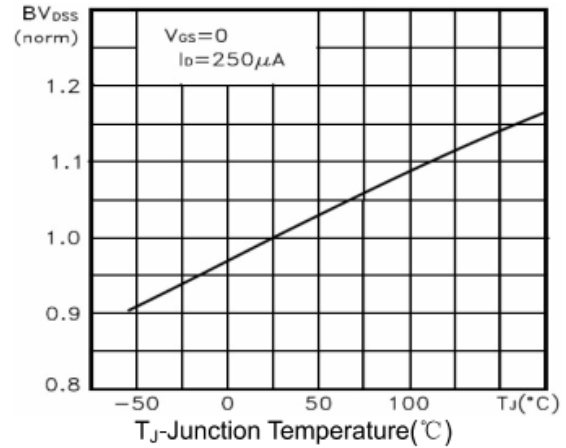


**Figure 6 Source- Drain Diode Forward**

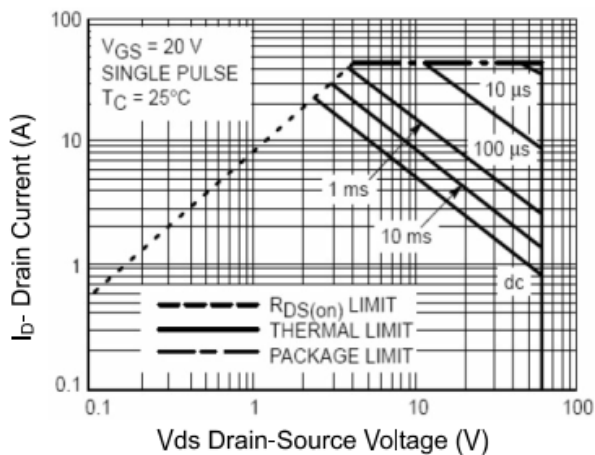
**Typical Performance Characteristics**



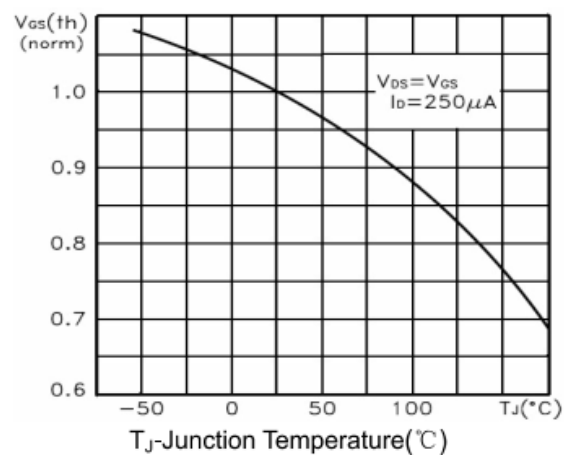
**Figure 7 Capacitance vs Vds**



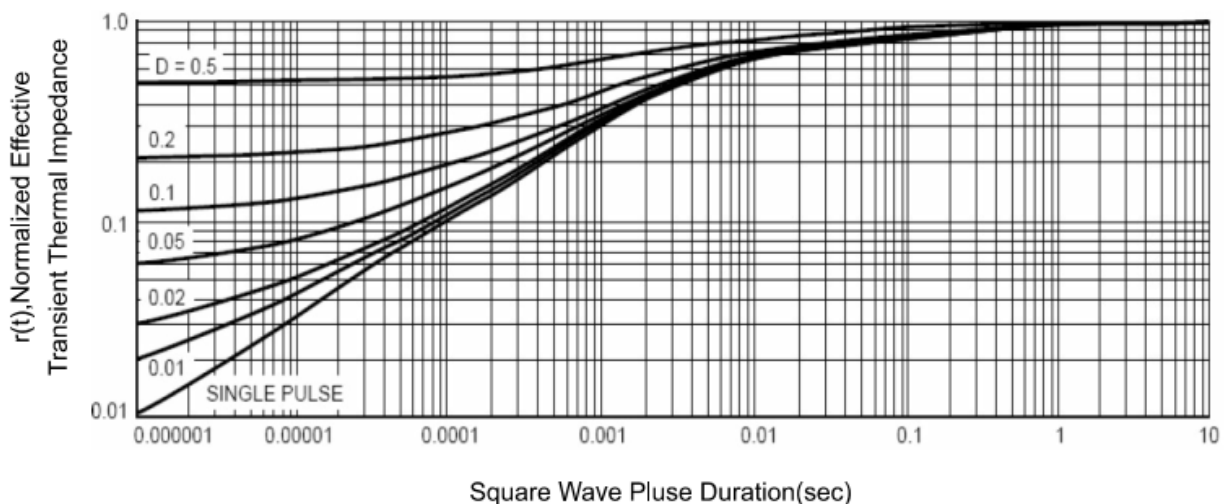
**Figure 9 BV<sub>DSS</sub> vs Junction Temperature**



**Figure 8 Safe Operation Area**

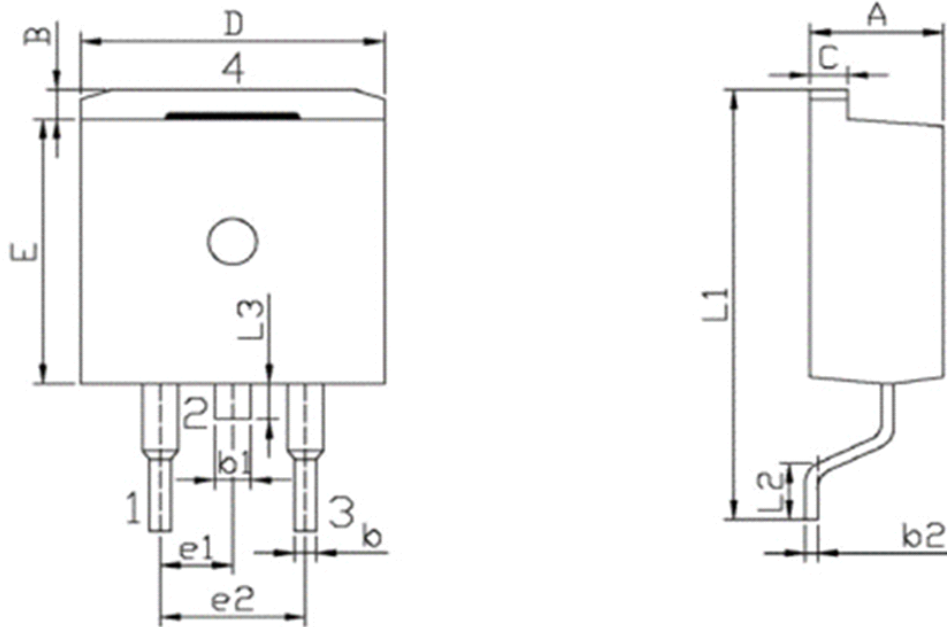


**Figure 10 V<sub>GS(th)</sub> vs Junction Temperature**



**Figure 11 Normalized Maximum Transient Thermal Impedance**

**TO-263 Package Information**



单位: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	4.30	4.70	E	9.00	9.40
B	1.00	1.40	e1	2.34	2.74
b	0.70	0.90	e2	4.88	5.28
b1	1.15	1.35	L1	15.00	16.00
b2	0.40	0.60	L2	2.24	2.84
C	1.20	1.40	L3	1.20	1.60
D	9.80	10.20			

## Revision History

Revision	Release	Remark
V1.0	2023/06/06	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.