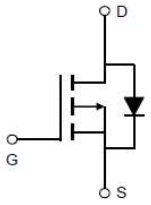
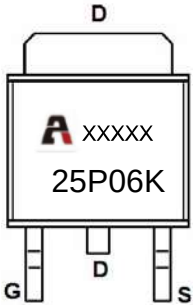
Feature

- -60V,-25A
  $R_{DS(ON)}$ <60mΩ @V_{GS}=-10V TYP: 52mΩ
  $R_{DS(ON)}$ <80mΩ @V_{GS}=-4.5V TYP: 64mΩ
- Advanced Trench Technology
- Lead free product is acquired
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- $T_J$max=150℃



Schematic Diagram



Marking and pin assignment

Application

- PWM applications
- Load Switch
- Power management

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
25P06K	AP25P06K	TO-252	13 inch	-	2500

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_C=25℃)	I_D	-25	A
Continuous Drain Current (T_C=100℃)	I_D	-19	A
Pulsed Drain Current (1)	I_{DM}	-100	A
Single Pulsed Avalanche Energy (4)	E_{AS}	50	mJ
Power Dissipation	P_D	36	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	3.5	℃/W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	65	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

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

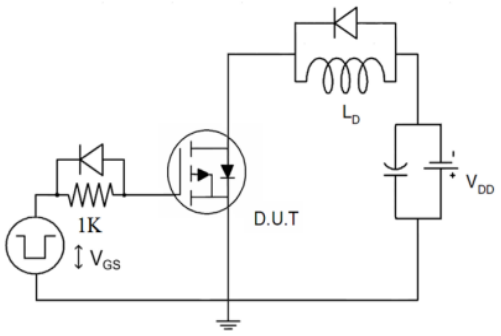
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-60	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-60V, V_{GS} = 0V	-	-	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V	-	-	±100	nA
Gate threshold voltage(3)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1.0	-1.5	-2.0	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS} =-10V, I_D =-10A	-	52	60	mΩ
		V_{GS} =-4.5V, I_D =-5A	-	64	80	
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =-30V, V_{GS} =0V, f =1MHz	-	1408	-	pF
Output Capacitance	C_{oss}		-	64	-	
Reverse Transfer Capacitance	C_{rss}		-	47	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=-30V, I_D=-10A, R_L=3Ω V_{GS}=-4.5V, R_G=4.5Ω	-	14	-	ns
Turn-on rise time	t_r		-	51	-	
Turn-off delay time	$t_{d(off)}$		-	197	-	
Turn-off fall time	t_f		-	112	-	
Total Gate Charge	Qg	VDS=-30V, ID=-10A, VGS=-10V	-	23	-	nC
Gate-Source Charge	Qgs		-	6.5	-	
Gate-Drain Charge	Qgd		-	3	-	
Source-Drain Diode characteristics						
Diode Forward voltage(2)	V_{DS}	V_{GS} =0V, I_S=-10A	-	-	-1.3	V
Diode Forward current(3)	I_S		-	-	-25	A
Body Diode Reverse Recovery Time	trr	T_J=25°， IF=-10A,di/dt=100A/us		25		ns
Body Diode Reverse Recovery Charge	Qrr	T_J=25°， IF=-10A,di/dt=100A/us		7.5		nc

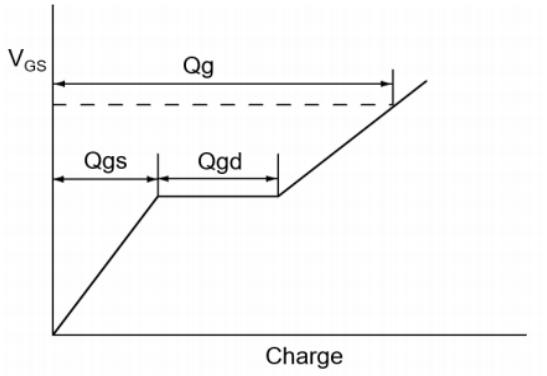
Notes:

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
4. EAS Condition:T_J=25℃,V_{DD}=-30V,R_G=25Ω,L=0.5mH

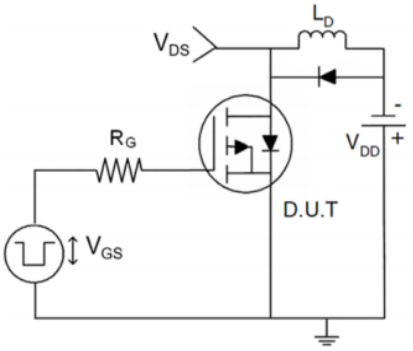
Test Circuit

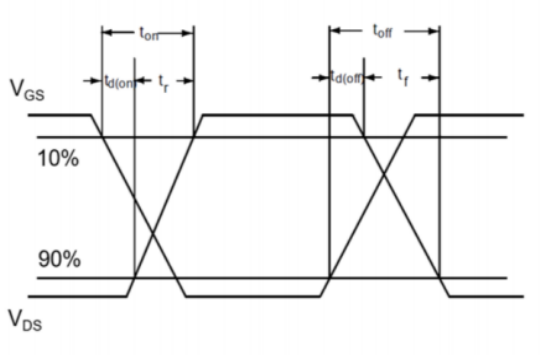
Gate Charge Test Circuit



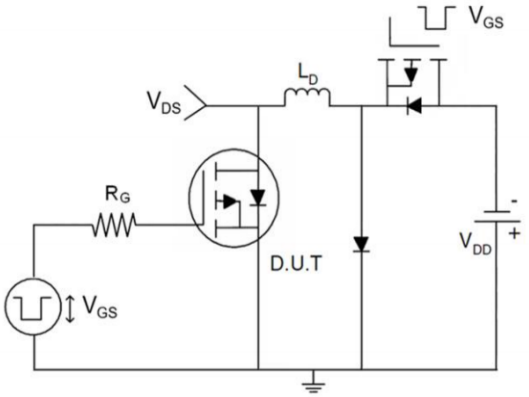


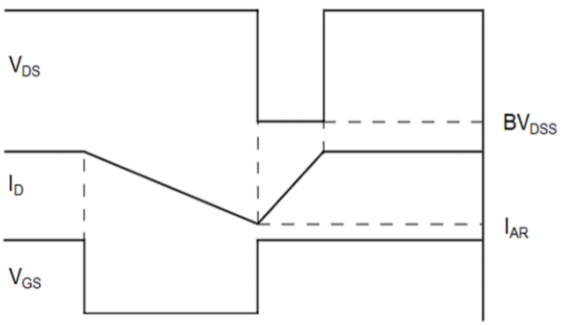
Switch Time Test Circuit





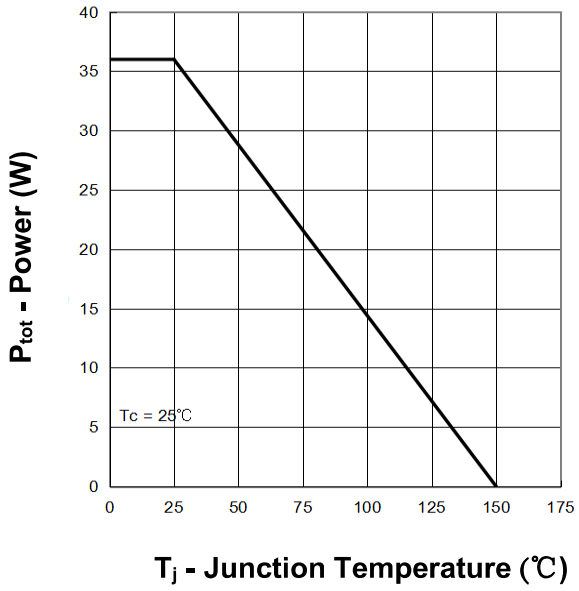
Unclamped Inductive Switching (UIS) Test Circuit



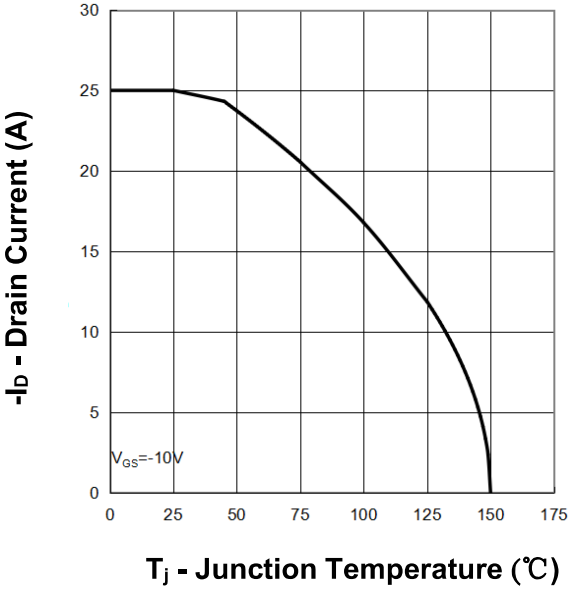


Typical Performance Characteristics

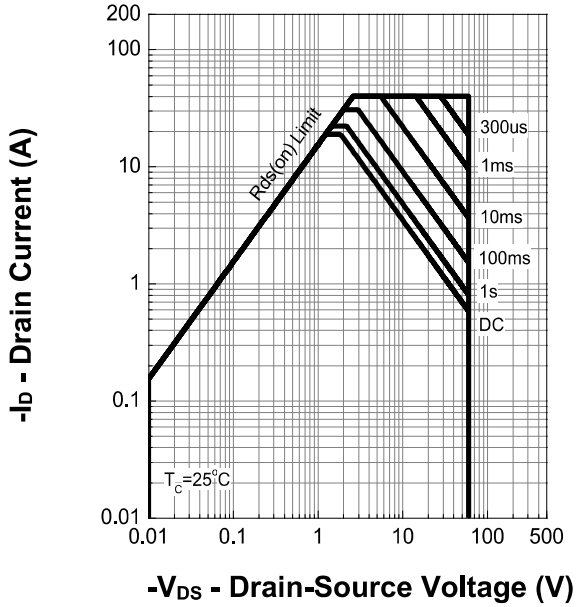
Power Dissipation



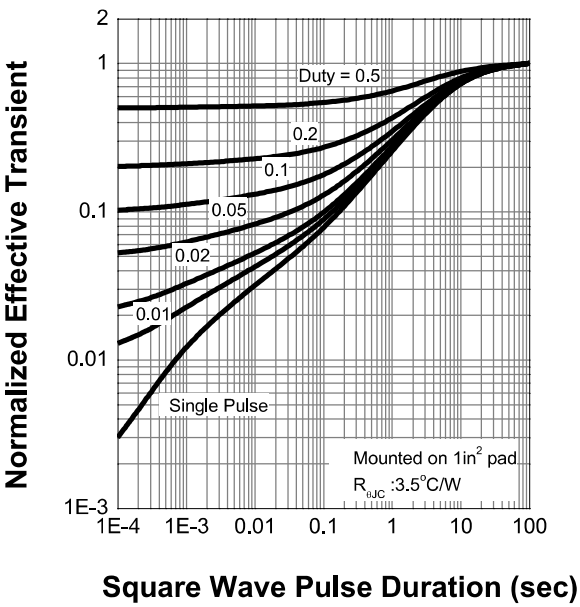
Drain Current



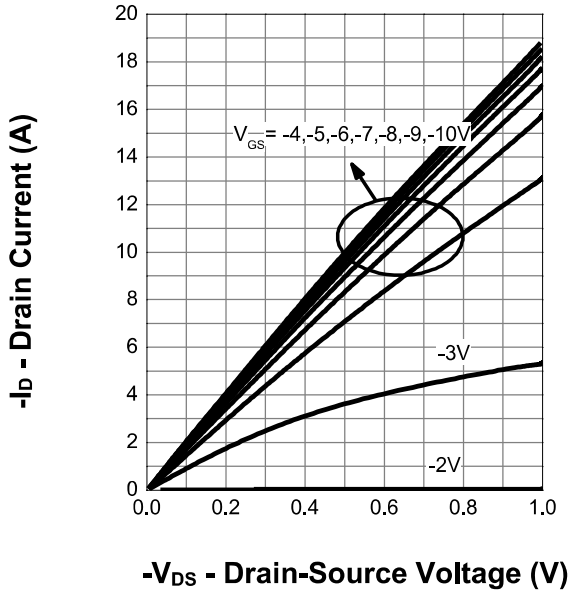
Safe Operation Area



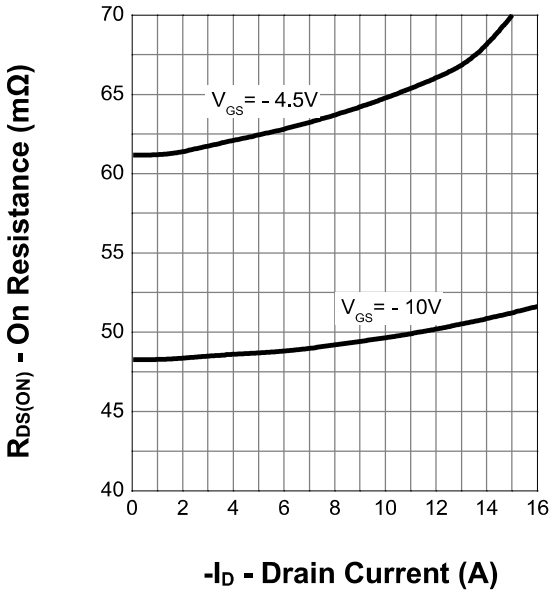
Thermal Transient Impedance



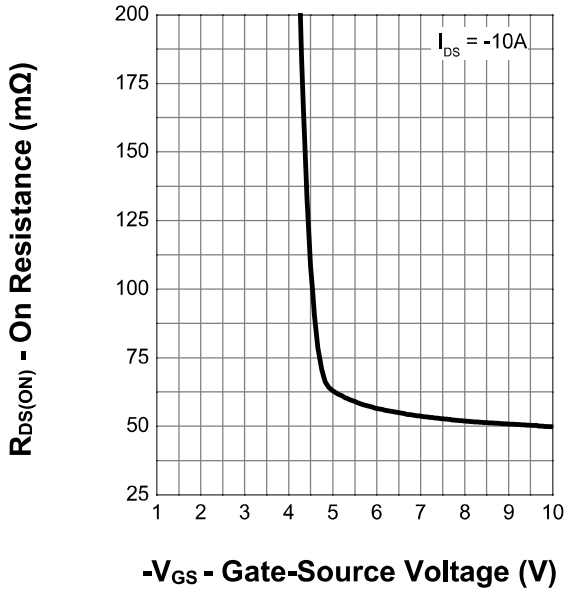
Output Characteristics



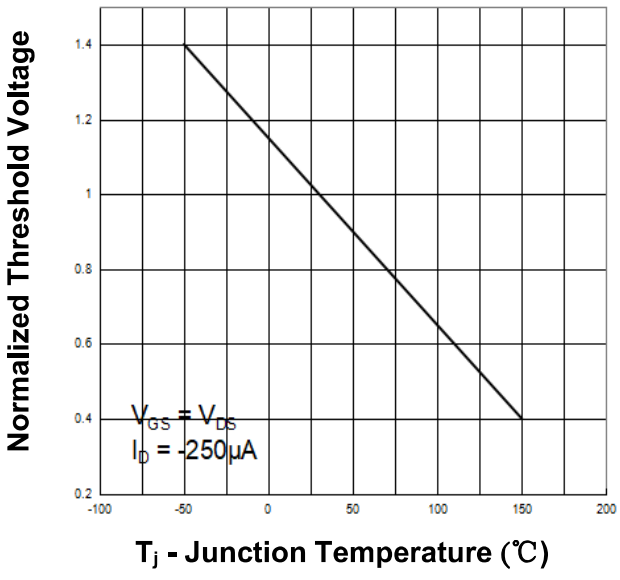
Drain-Source On Resistance



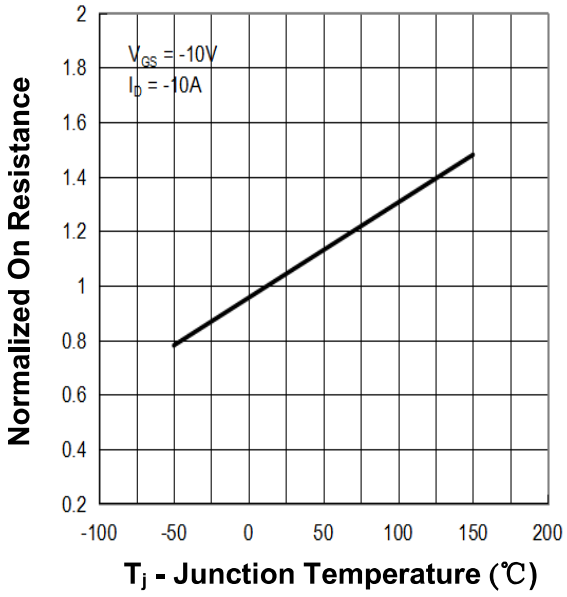
Transfer Characteristics



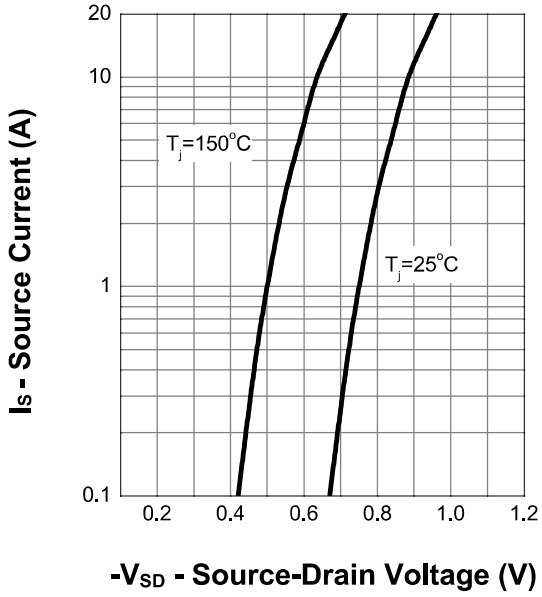
Gate Threshold Voltage



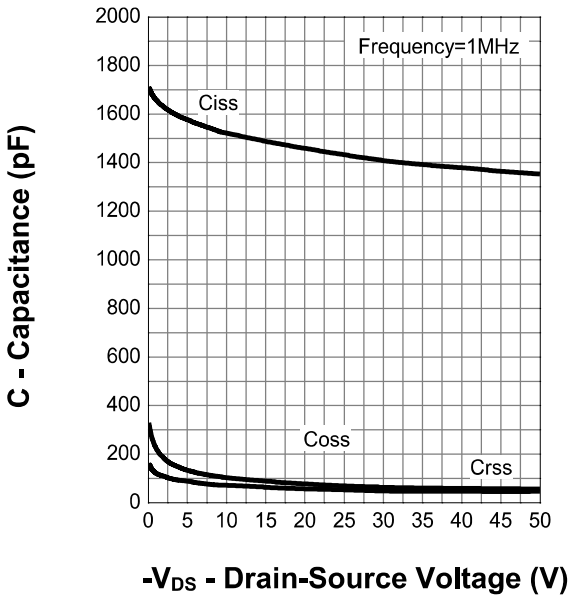
Drain-Source On Resistance



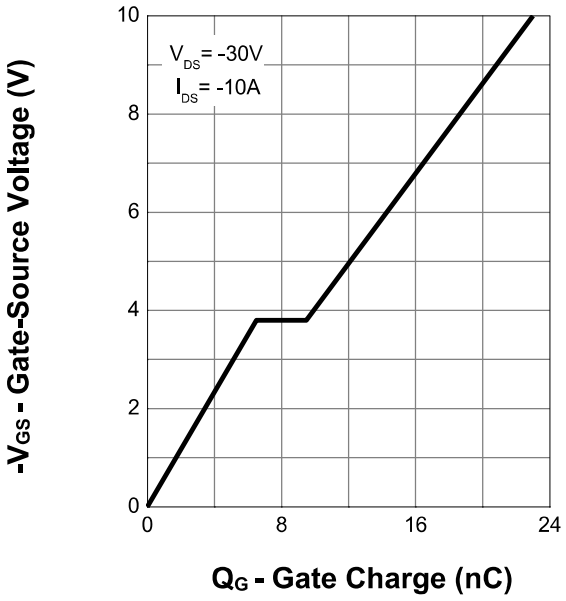
Source-Drain Diode Forward



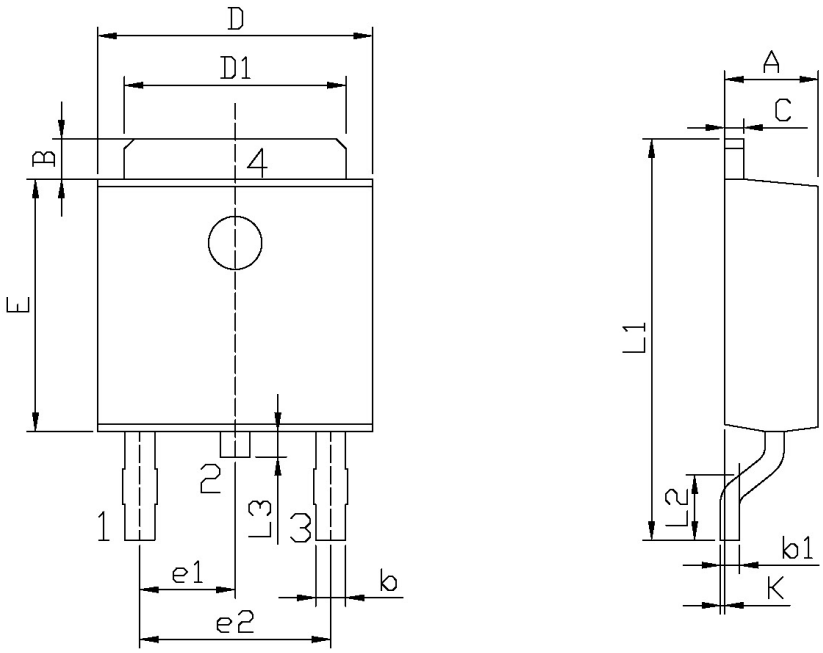
Capacitance



Gate Charge



TO-252 Package Information



单位：mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.50	0.90	e2	4.43	4.73
b1	0.45	0.55	L1	9.45	9.95
C	0.45	0.55	L2	1.25	1.75
D	6.45	6.75	L3	0.60	0.90
D1	5.10	5.50	K	0.00	0.10

TO-252

Revision History

Revision	Release	Remark
V1.0	2022/11/30	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.