



# ACE6428D

## N-Channel Enhancement Mode Field Effect Transistor

### Description

The ACE6428D uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , low gate charge. This device is suitable for use as a high side switch in SMPS and general purpose applications.

### Features

- $V_{DS}=30V, I_D=60A$
- $R_{DS(ON)}@V_{GS}=10V, TYP 4.9m\Omega$
- $R_{DS(ON)}@V_{GS}=14.5V, TYP 4.7m\Omega$

### Absolute Maximum Ratings

Parameter	Symbol	Max	Unit	
Drain-Source Voltage	$V_{DSS}$	30	V	
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V	
Drain Current (Continuous) *AC	$I_D$	TC=25°C	60	A
		TC=100°C	48	
Drain Current (Pulse) *B	$I_{DM}$	140		
Power Dissipation	$P_D$	50	A	
Single Pulse Avalanche Energy	$E_{AS}$	100	mJ	
Thermal Resistance, Junction-to-Case*A	$P_D$	2.5	°C/W	
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	°C	

A: The value of  $R_{\theta JA}$  is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with  $T_A=25^\circ C$ . The value in any given application depends on the user's specific board design

B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the  $t \leq 10s$  junction to ambient thermal resistance rating.

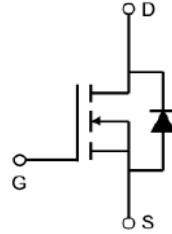


# ACE6428D

## N-Channel Enhancement Mode Field Effect Transistor

### Packaging Type

DFN5\*6-8L-EP



### Ordering information

ACE6428D XX + H

Halogen - free

Pb - free

PN: DFN5\*6-8L-EP



# ACE6428D

## N-Channel Enhancement Mode Field Effect Transistor

### Electrical Characteristics $T_A=25\text{ }^\circ\text{C}$ unless otherwise noted

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D=250\mu A$	30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 24V, V_{GS} = 0V$			1	$\mu A$
Gate Leakage Current	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_{DS}=250\mu A$	1	1.6	2.5	nA
Gate Threshold Voltage	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$		4.9	6	m $\Omega$
		$V_{GS}=4.5V, I_D=10A$		6.7	9	
Forward Trans Conductance	$g_{FS}$	$V_{DS}=5V, I_D=10A$	32			S
Diode Forward Voltage	$V_{SD}$	$I_{SD}=1A, V_{GS}=0V$			1.2	V
Diode Forward Current	$I_S$				40	A
Switching						
Total Gate Charge	$Q_g$	$V_{DS}=15V, I_D=40A$ $V_{GS}=4.5V$		12		nC
Gate-Source Charge	$Q_{gs}$			3		
Gate-Drain Charge	$Q_{gd}$			7.5		
Turn-On Delay Time	$T_{d(on)}$	$V_{DS}=15V, I_D=1A$ $V_{GS}=10V, R_{GEN}=6\Omega$		15		ns
Turn-On Rise Time	$t_f$			13		
Turn-Off Delay Time	$t_{d(off)}$			32		
Turn-Off Fall Time	$t_f$			9		
Dynamic						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V$ $f=1MHz$		1500		pF
Output Capacitance	$C_{oss}$			260		
Reverse Transfer Capacitance	$C_{rss}$			130		

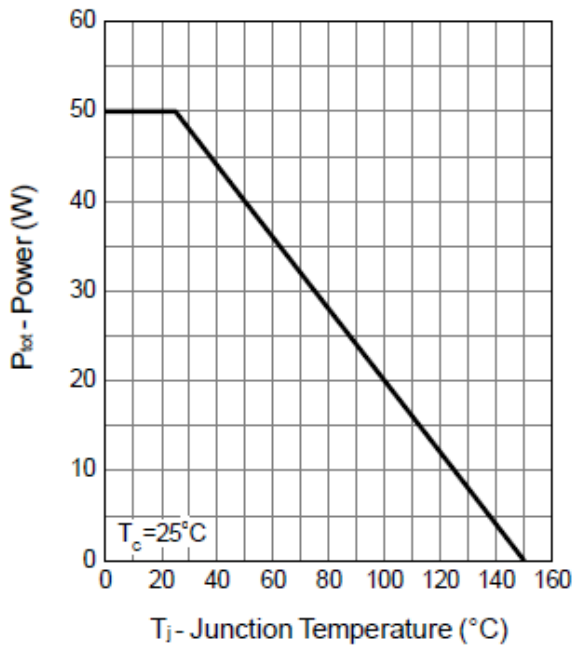


# ACE6428D

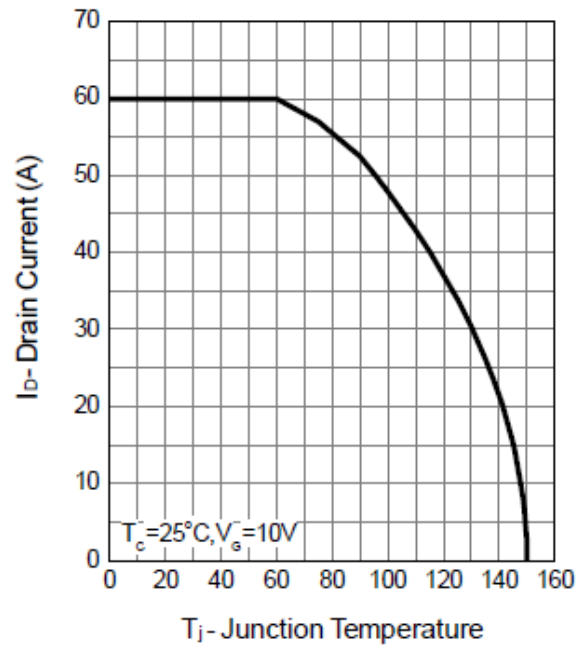
## N-Channel Enhancement Mode Field Effect Transistor

### Typical Performance Characteristics

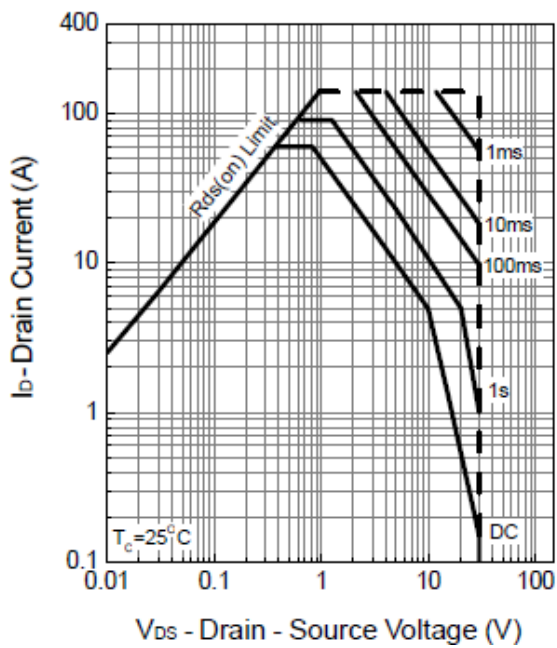
**Power Dissipation**



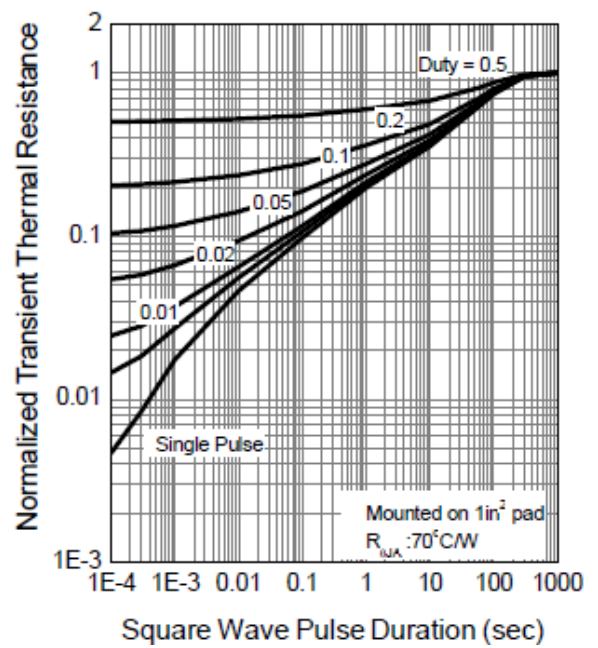
**Drain Current**



**Safe Operation Area**



**Thermal Transient Impedance**

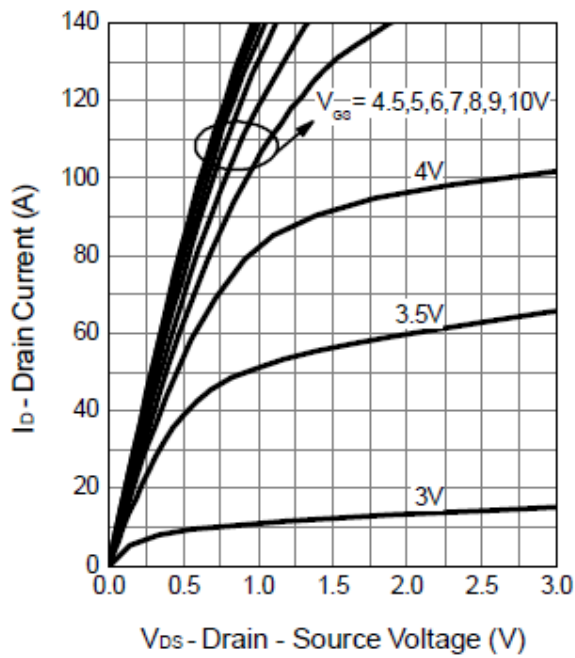




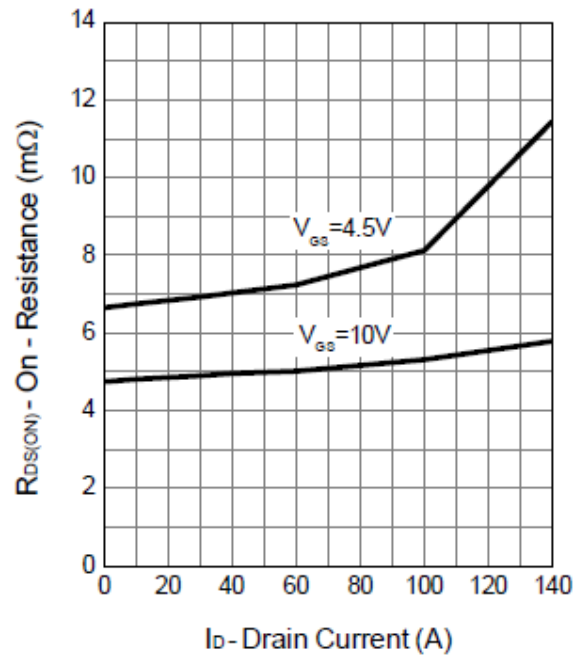
# ACE6428D

## N-Channel Enhancement Mode Field Effect Transistor

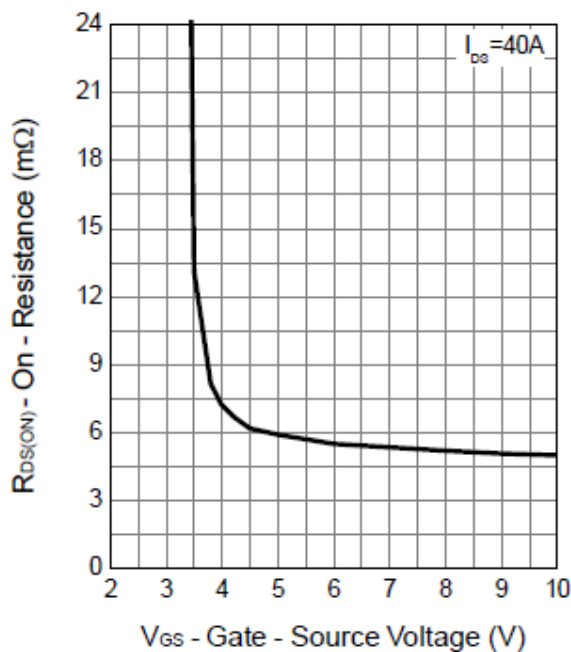
**Output Characteristics**



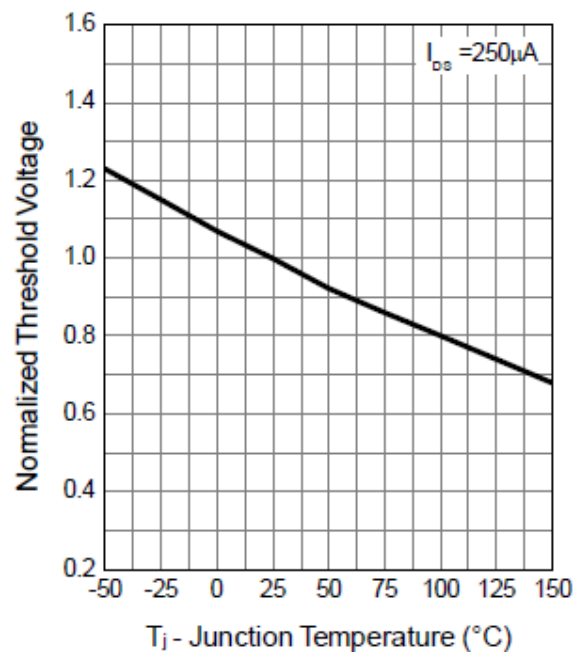
**Drain-Source On Resistance**



**Gate-Source On Resistance**



**Gate Threshold Voltage**

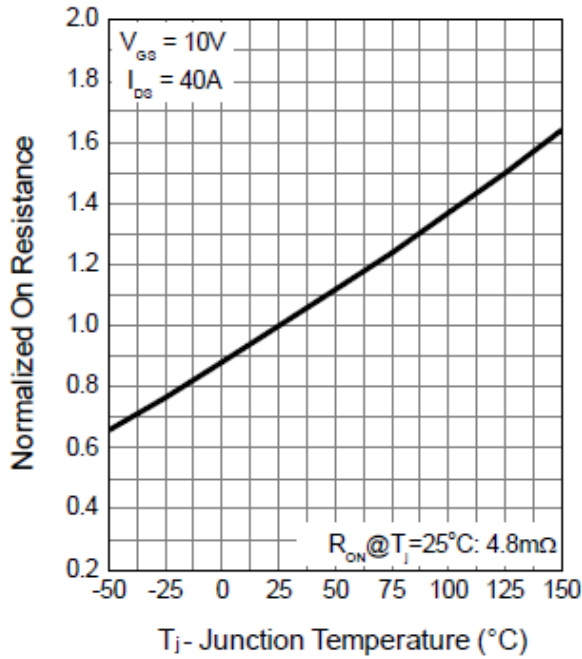




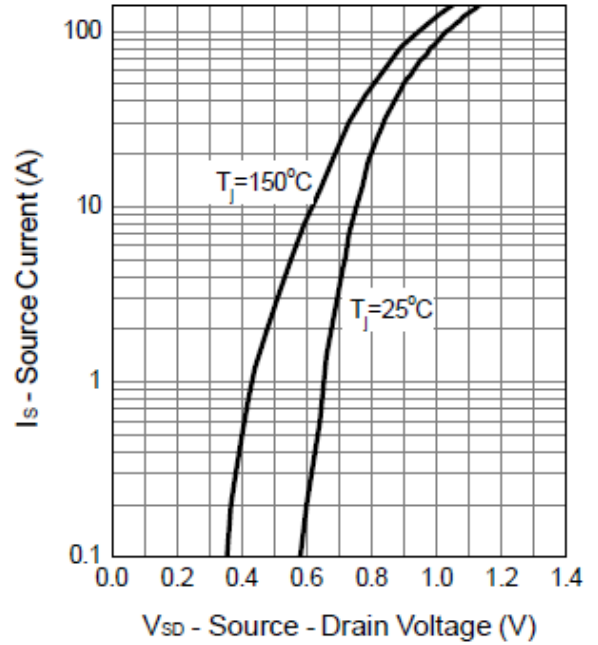
# ACE6428D

## N-Channel Enhancement Mode Field Effect Transistor

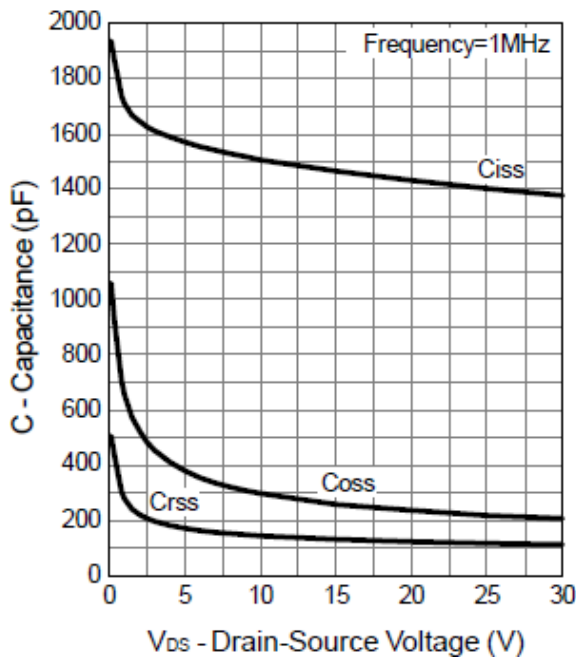
### Drain-Source On Resistance



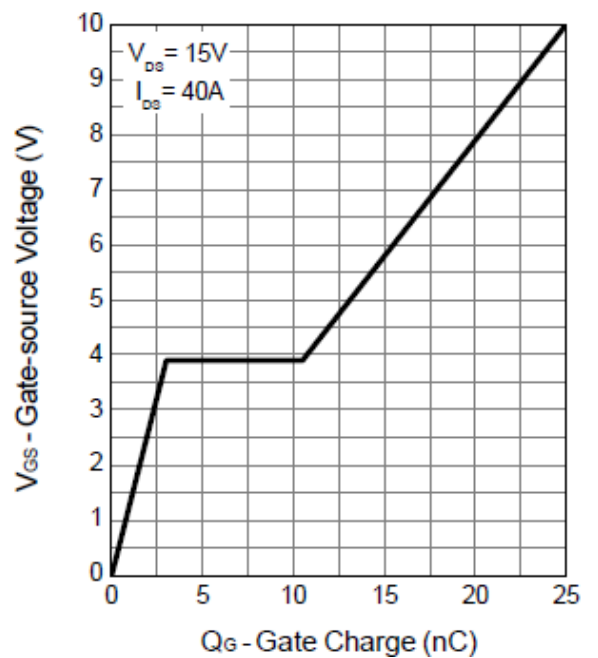
### Source-Drain Diode Forward



### Capacitance

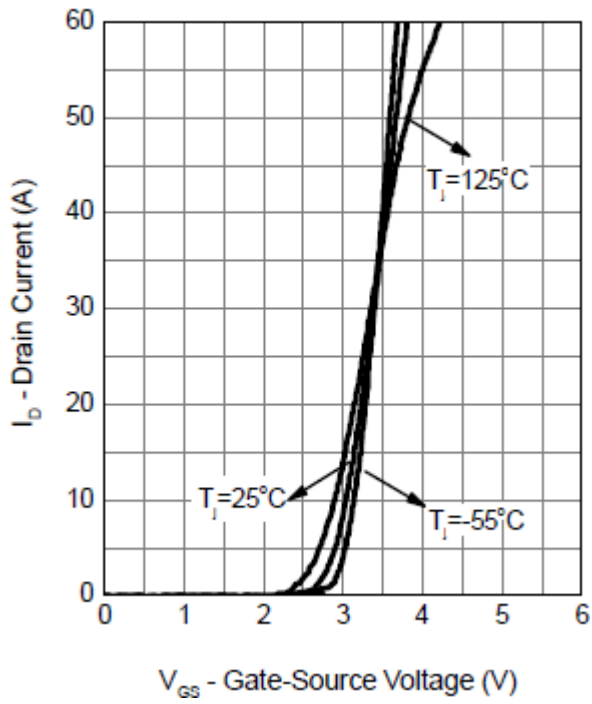


### Gate Charge





Transfer Characteristics



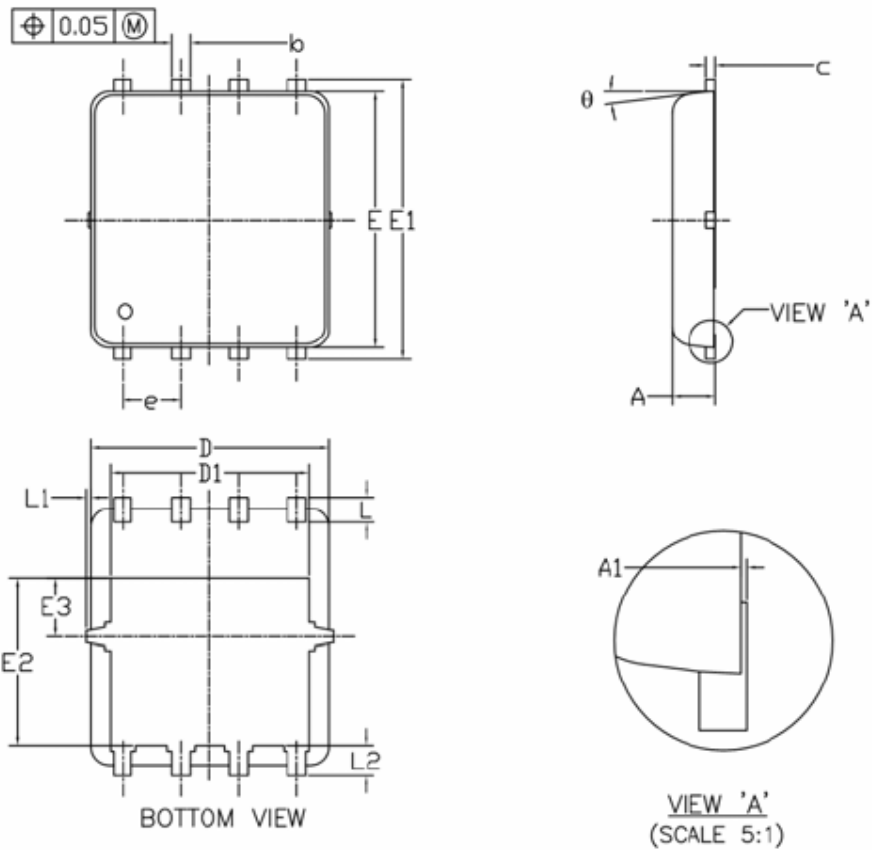


# ACE6428D

## N-Channel Enhancement Mode Field Effect Transistor

### Packing Information

DFN5\*6-8L-EP



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.85	0.95	1.00	0.033	0.037	0.039
A1	0.00	—	0.05	0.000	—	0.002
b	0.30	0.40	0.50	0.012	0.016	0.020
c	0.15	0.20	0.25	0.006	0.008	0.010
D	5.20 BSC			0.205 BSC		
D1	4.35 BSC			0.171 BSC		
E	5.55 BSC			0.219 BSC		
E1	6.05 BSC			0.238 BSC		
E2	3.625 BSC			0.143 BSC		
E3	1.275 BSC			0.050 BSC		
e	1.27 BSC			0.050 BSC		
L	0.45	0.55	0.65	0.018	0.022	0.026
L1	0	—	0.15	0	—	0.006
L2	0.68 REF			0.027 REF		
$\theta$	0°	—	10°	0°	—	10°





# ACE6428D

## N-Channel Enhancement Mode Field Effect Transistor

### Notes

ACE does not assume any responsibility for use as critical components in life support devices or systems without the express written approval of the president and general counsel of ACE Electronics Co., LTD. As sued herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

ACE Technology Co., LTD.  
<http://www.ace-ele.com/>