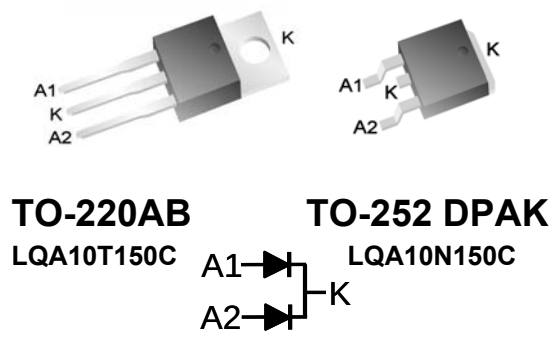
LQA10T150C，LQA10N150C
Qspeed™产品系列

150 V/10 A共阴极二极管

产品概览

$I_{F(AVG)}$（每个二极管）	10	A
V_{RRM}	150	V
Q_{RR}（125 °C下典型值）	21.4	nC
I_{RRM}（125 °C下典型值）	1.41	A
软度t_b/t_a（125 °C下典型值）	0.59	

引脚分配



符合RoHS标准

封装采用无铅电镀和符合IEC 61249-2-21指令的“绿色环保” 无卤模封料。

概述

该器件在所有150 V硅二极管中具有最低的Q_{RR}。其恢复特性能提高效率、降低EMI并省去缓冲电路。

应用

- AC/DC和DC/DC输出整流
  - 输出和续流二极管
- 电机驱动电路
- DC-AC逆变器

特性

- 低Q_{RR}、低I_{RRM}、低t_{RR}
- 可实现高dI_F/dt值
- 软恢复

优势

- 提高了效率
  - 无需缓冲电路
  - 缩减EMI滤波元件的尺寸和数目
- 实现极快速开关

绝对最大额定值

绝对最大额定值是指一旦超过就可能使器件受损或缩短其使用寿命的极限值。不建议在此类条件下进行工作操作。

符号	参数	条件	额定值	单位
V_{RRM}	峰值重复反向电压	T_J = 25 °C	150	V
$I_{F(AVG)}$	平均前馈电流	每个二极管，T_J = 150°C，T_C = 130 °C	5	A
		每个器件，T_J = 150°C，T_C = 130 °C	10	A
I_{FSM}	非重复峰值浪涌电流	每个二极管，60 Hz，½周期	60	A
I_{FSM}	非重复峰值浪涌电流	每个二极管，t = 28 µs正弦的½周期，T_C = 25 °C	350	A
T_J	工作结温范围		-55至150	°C
T_{STG}	贮存温度		-55至150	°C
	引线焊接温度	引线距壳体1.6mm，10秒	300	°C
P_D	功耗	T_C = 25 °C	27.7	W

热阻

符号	电阻来自：	条件	额定值	单位
$R_{\theta JA}$	结到环境	TO-220AB（仅）	62	°C/W
$R_{\theta JC}$	结到壳体	每个二极管	4.5	°C/W
		每个器件	2.3	°C/W

电气规格，T_J = 25 °C（除非另有指定）

符号	参数	条件		最小值	典型值	最大值	单位
每个二极管的DC特性							
I_R	每个二极管的反向电流	V_R = 150 V，T_J = 25 °C		-	-	250	µA
		V_R = 150 V，T_J = 125 °C		-	0.1	-	mA
V_F	每个二极管的正向电压	I_F = 5 A，T_J = 25 °C		-	0.95	1.1	V
		I_F = 5 A，T_J = 150 °C		-	0.8	-	V
C_J	每个二极管的结电容	V_R = 10 V，1 MHz		-	22	-	pF
每个二极管的动态特性							
t_{RR}	每个二极管的反向恢复时间	dI_F/dt = 100 A/µs V_R = 100 V， I_F = 5 A	T_J = 25 °C	-	15.1	-	ns
			T_J = 125 °C	-	23.6	-	ns
Q_{RR}	每个二极管的反向恢复电荷	dI_F/dt = 100 A/µs V_R = 100 V， I_F = 5 A	T_J = 25 °C	-	8.6	21.3	nC
			T_J = 125 °C	-	21.4	-	nC
I_{RRM}	每个二极管的最大反向恢复电流	dI_F/dt = 100 A/µs V_R = 100 V， I_F = 5 A	T_J = 25 °C	-	0.92	2.06	A
			T_J = 125 °C	-	1.41	-	A
S	每个二极管的软度 = $\frac{t_b}{t_a}$	dI_F/dt = 100 A/µs V_R = 100 V， I_F = 5 A	T_J = 25 °C	-	0.69	-	
			T_J = 125 °C	-	0.59	-	

元件工程师请注意：Q系列二极管的设计和结构采用肖特基技术。因此，元件工程师应规划其测试装置，使其与传统的肖特基测试装置类似。（详细信息请参考应用指南AN-300。）

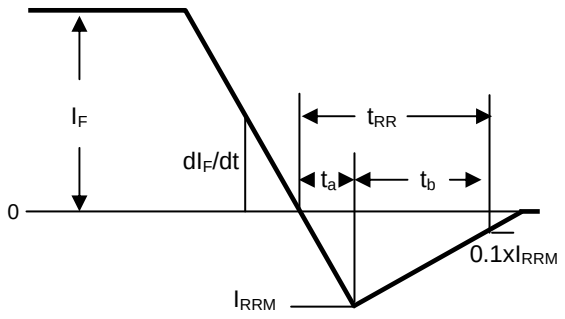


图1. 反向恢复定义

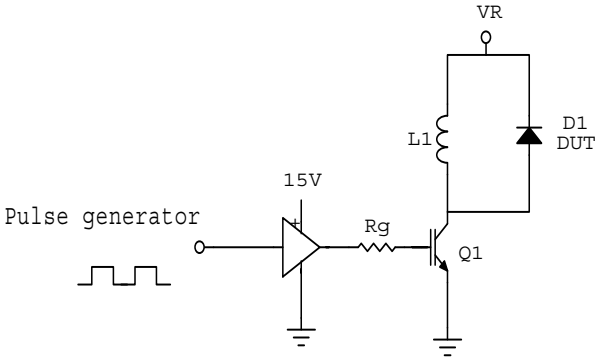


图2. 反向恢复测试电路

电气规格，T_J = 25 °C（除非另有指定）

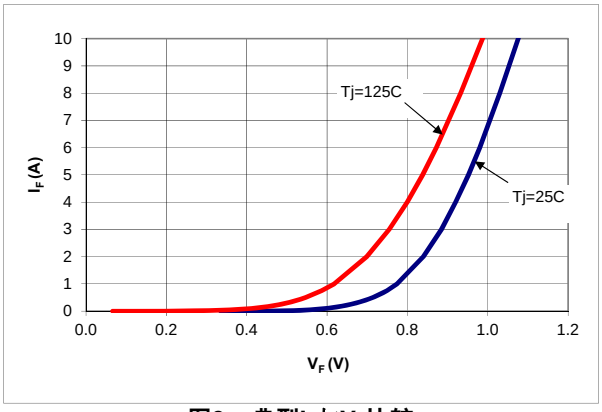


图3. 典型I_F与V_F比较

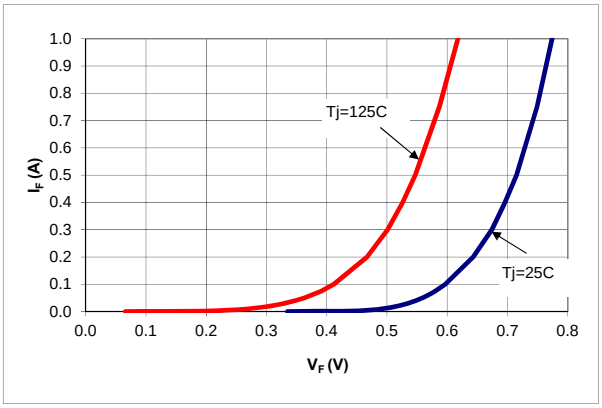


图4. 典型I_F与V_F比较

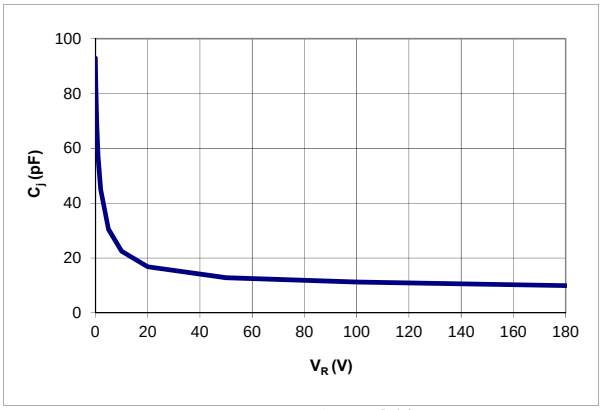


图5. 典型C_j与V_R比较

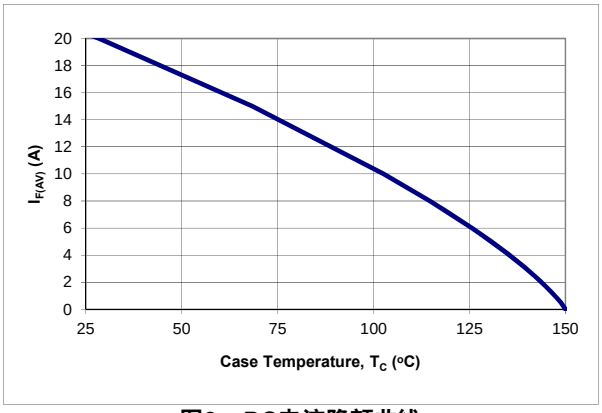


图6. DC电流降额曲线

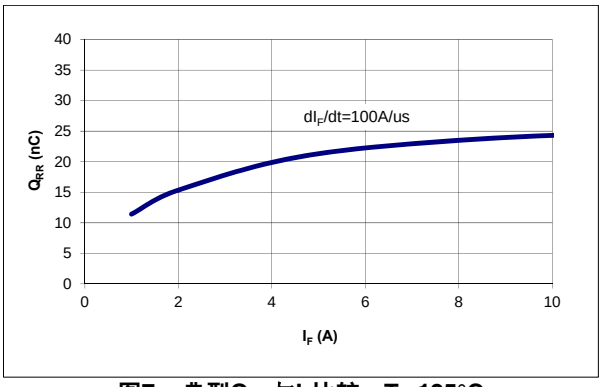


图7. 典型Q_{RR}与I_F比较，T_j=125°C

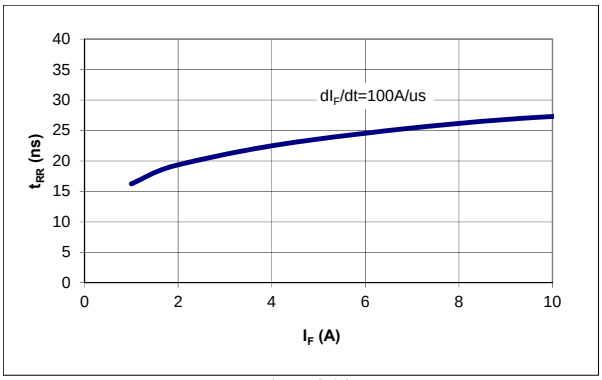


图8. 典型t_{RR}与I_F比较，T_j=125°C

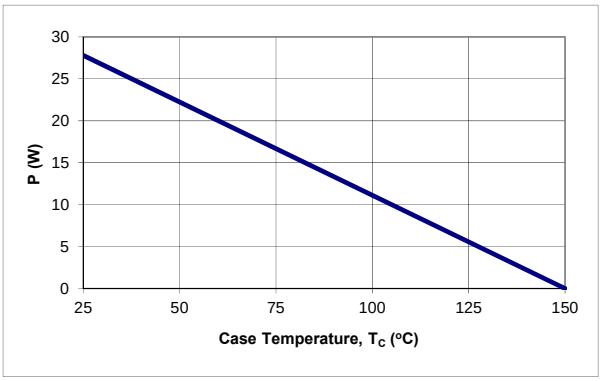


图9. 功率降额曲线

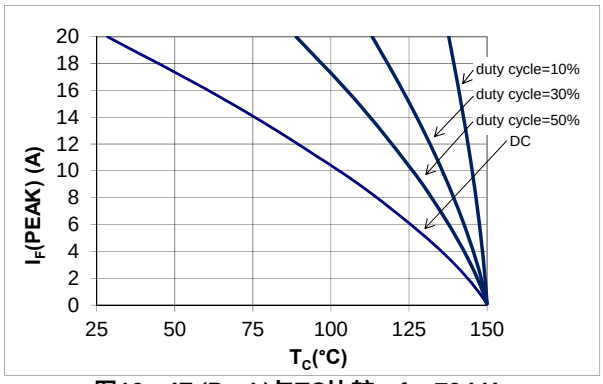


图10. IF (Peak)与TC比较，f = 70 kHz

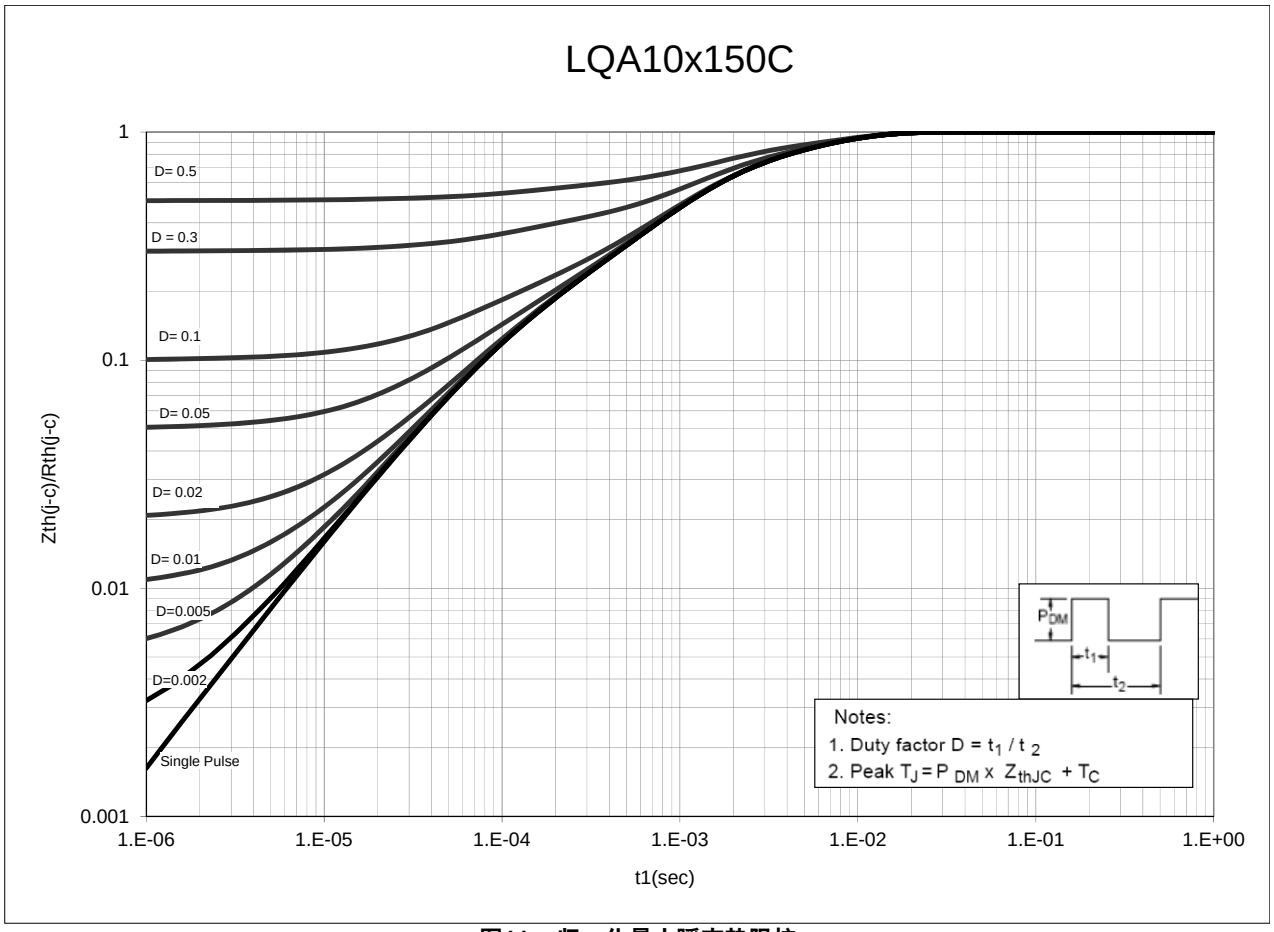
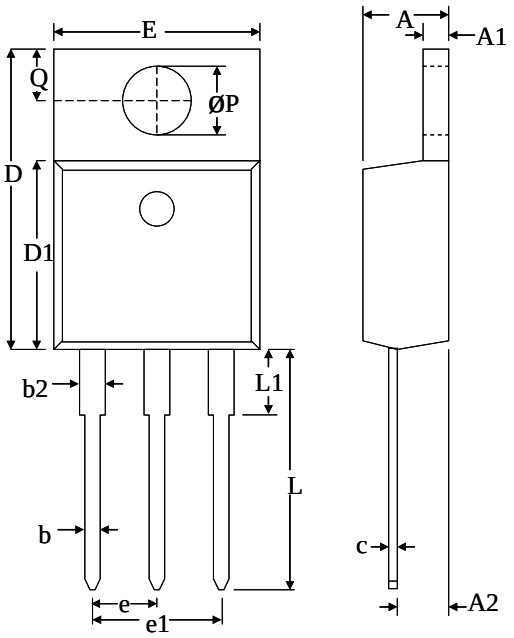


图11. 归一化最大瞬态热阻抗

外形尺寸图

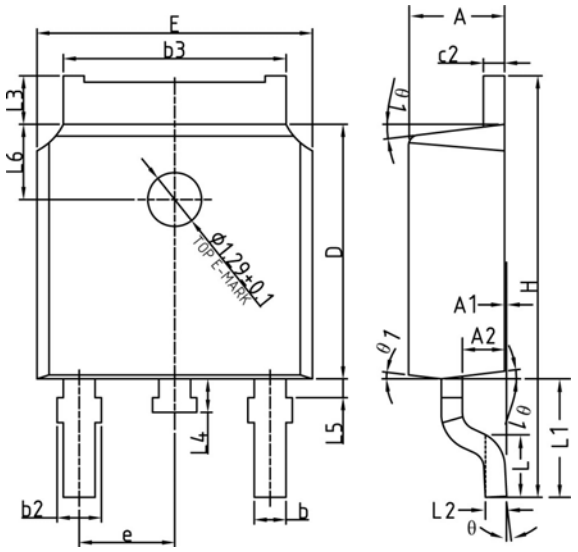
TO-220AB



	毫米	
尺寸	最小值	最大值
A	4.32	4.70
A1	1.11	1.38
A2	2.59	2.79
b	0.77	1.00
b2	1.23	1.36
C	0.34	0.47
D	14.71	15.75
D1	9.05	9.25
E	9.96	10.36
e	2.44	2.64
e1	4.98	5.18
L	12.70	14.22
L1	–	3.90
ØP	3.71	3.96
Q	2.54	2.90

机械安装方法	最大扭矩/压力规格
螺丝穿过封装片中的孔	1牛米(nm)或8.8英寸磅(lb-in)
夹住封装体	每平方厘米12.3千克力(kgf/cm^2)或175 lbf/in^2

TO-252 DPAK



	毫米	
尺寸	最小值	最大值
A	2.20	2.38
A1	0	0.10
A2	0.90	1.10
b	0.72	0.85
b2	0.72	0.90
b3	5.13	5.46
c2	0.47	0.60
D	6.00	6.20
E	6.50	6.70
e	2.186	2.386
H	9.80	10.40
L	1.40	1.70
L1	2.90 REF	
L2	0.51 BSC	
L3	0.90	1.25
L4	0.60	1.00
L5	0.15	0.75
L6	1.80 REF	
Θ	0°	8°
Θ1	5°	9°

焊接时间和温度：本产品经设计可用于高温、无铅焊接。元件引线可持续10秒承受300 °C的最高温度。详细信息请参考应用指南AN-303。

元件订购信息

元件编号	封装	包装
LQA10T150C	TO-220AB	50件/管
LQA10N150C	TO-252 DPAK	2500件/卷

本文档所提供的信息可能会发生变更，恕不另行通知。

修订版本	注释	日期
1.0	初始版本	12/14

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