森美特半导体股份有限公司

产品承认书

产品类别：肖特基二极管

产品型号：20MQ100

修订部门：研发部

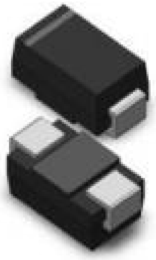
修订日期：2024-11-04

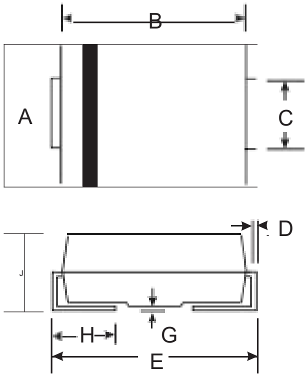
一、产品分类：

产品类别型号：20MQ100类别名称：肖特基二极管

■无铅产品

二、元器件封装外形尺寸图：





SMA(DO-214AC)		
Dim	Min	Max
A	2.29	2.92
B	4.00	4.60
C	1.27	1.63
D	0.15	0.31
E	4.80	5.59
G	0.10	0.20
H	0.76	1.52
J	2.01	2.62
All Dimensions in mm		

三、本体印字方式：

名称	封装方式	本体印字	说明
20MQ100	DO-214AC/SMA	20B100	:品牌logo 20B100： 本体代码

四、数据表：

Maximum Ratings and Electrical Characteristics

T_A = 25。C unless otherwise specified

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	2	A
V_{RRM}		100	V
I_{FSM}	t_p = 5 μs sine	120	A
V_F	2 A_{pk}, T_J = 125 °C	0.72	V
T_J	Range	- 55 to 150	°C

PARAMETER	SYMBOL	VS-20MQ100-M3	UNITS
Maximum DC reverse voltage	V_R	100	V
Maximum working peak reverse voltage	V_{RWM}		

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current See fig. 4	$I_{F(AV)}$	50 % duty cycle at T_L = 113 °C, rectangular waveform On PC board 9 mm_2 island (0.013 mm thick copper pad area)		2.1	A
		50 % duty cycle at T_L = 116 °C, rectangular waveform On PC board 9 mm_2 island (0.013 mm thick copper pad area)		2	
Maximum peak one cycle non-repetitive surge current See fig. 6	I_{FSM}	5 μs sine or 3 μs rect. pulse	Following any rated load condition and with rated V_{RRM} applied	120	A
		10 ms sine or 6 ms rect. pulse		30	
Non-repetitive avalanche energy	E_{AS}	T_J = 25 °C, I_{AS} = 0.5 A, L = 8 mH		1.0	mJ
Repetitive avalanche current	I_{AR}			0.5	A

ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	V_{FM} (1)	2 A	T_J = 25 °C	0.91	V
		1.5 A		0.85	
		1 A		0.78	
		2 A	T_J = 125 °C	0.72	
		1.5 A		0.68	
		1 A		0.63	
Maximum reverse leakage current See fig. 2	I_{RM}	T_J = 25 °C	V_R = Rated V_R	0.1	mA
		T_J = 125 °C		1	
Threshold voltage	$V_{F(TO)}$	T_J = T_J maximum		0.52	V
Forward slope resistance	r_t			78.4	mΩ
Typical junction capacitance	C_T	V_R = 10 V_{DC}, T_J = 25 °C, test signal = 1 MHz		38	pF
Typical series inductance	L_S	Measured lead to lead 5 mm from package body		2.0	nH
Maximum voltage rate of change	dV/dt	Rated V_R		10 000	V/µs

Note

(1) Pulse width = 300 µs, duty cycle = 2 %

THERMAL - MECHANICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range	T_J(1), T_{Stg}		- 55 to 150	°C
Maximum thermal resistance, junction to ambient	R_{thJA}	DC operation	80	°C/W
Approximate weight			0.07	g
			0.002	oz.

Note

(1) $\frac{dP_{tot}}{dT_J} < \frac{1}{R_{thJA}}$ thermal runaway condition for a diode on its own heatsink

五、曲线图：

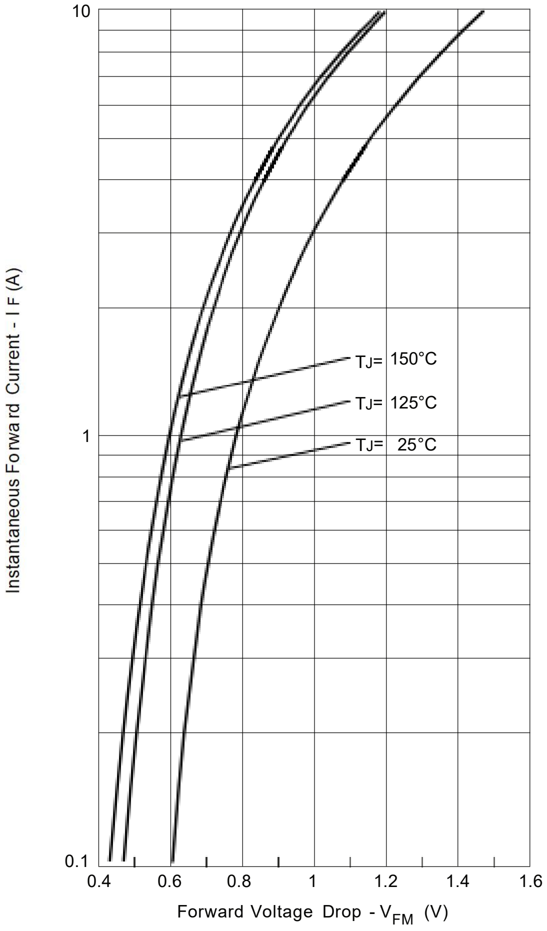


Fig. 1 - Maximum Forward Voltage Drop Characteristics

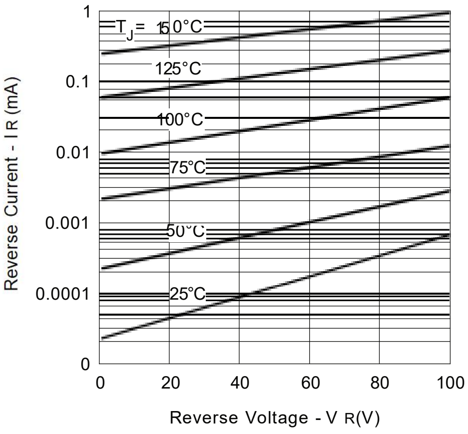


Fig. 2 - Typical Peak Reverse Current vs. Reverse Voltage

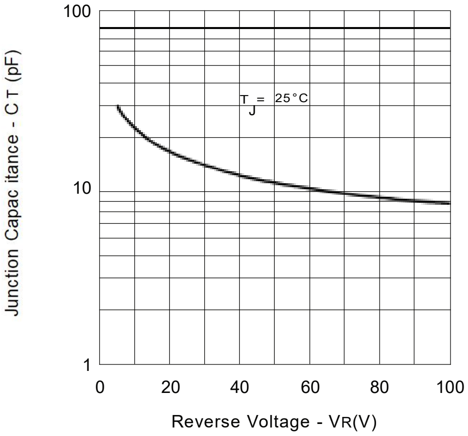


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

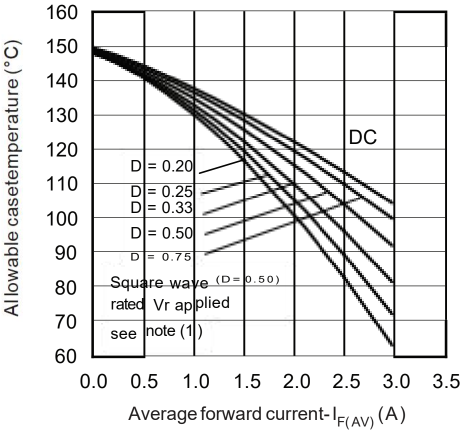


Fig. 4 - Maximum Average Forward Current vs. Allowable Lead Temperature

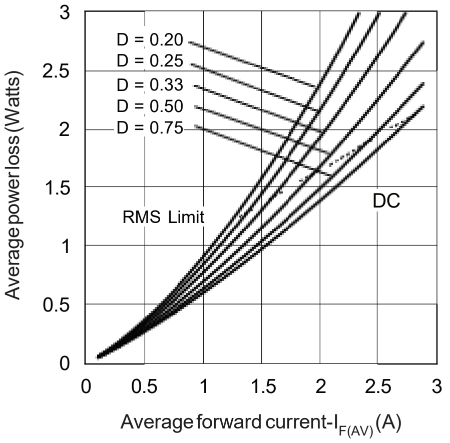
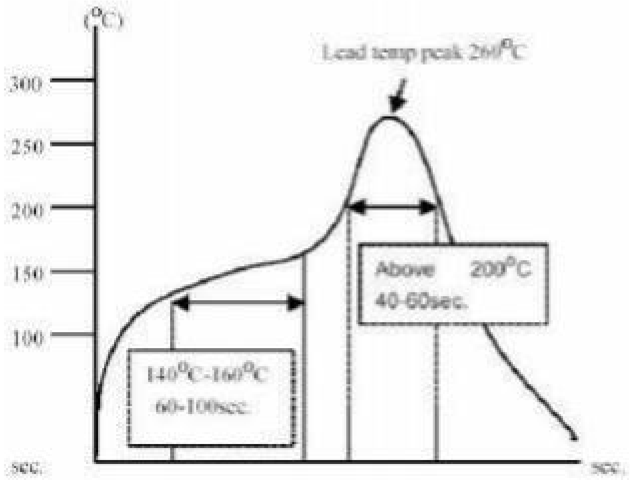


Fig. 5 - Maximum Average Forward Dissipation vs. Average Forward Current

回流焊的温度曲线



六、耐焊接热

温度 280±5℃， 时间 10 秒，测试 VZ 、IR 符合规范要求。

七、元器件可靠性测试：

Reliability Test 可靠性测试	Test Conditions 测试条件	Sampling Plan 取样计划	Frequency 频 率
Solderability Test 可焊性测试	Ta = 230±5℃, time = 3-6sec.	Sample size : 10 pcs Acc: 0/ 1	每批次抽测一次
Marking Permanence 印字测试	Per as IEC 682-45 method 1, solvent: 1, 1, 1-TCE and ethanol	Sample size : 10 pcs Acc: 0/ 1	每天每台机抽测一次
Thermal Shock 热冲击	0℃, 1 minute;100℃, 3minute 10 cycles	Sample size : 20 pcs Acc: 0/ 1	各封装产品随机三个型号每月检测一次
High Temperature Storage Test 高温贮存测试	Ta=150℃, 1000 Hours	Sample size : 20 pcs Acc: 0/ 1	各封装产品随机三个型号每月检测一次
Continuous Operation Test (Zener Only) 长期工作寿命测试	Dc voltage applied on reverse bias at full power, 1000hours	Sample size : 20 pcs Acc: 0/ 1	各封装产品随机三个型号每月检测一次
High Temperature/Humidity Storage Test 恒温/ 恒湿测试	Ta=65℃ , RH=98% 100hours	Sample size : 20 pcs Acc: 0/ 1	各封装产品随机三个型号每月检测一次
Pressure cooker 高压蒸煮	15 Psig , TA= 121℃,4H	Sample size : 20 pcs Acc: 0/ 1	各封装产品随机三个型号每月检测一次
Soldering Heat 耐焊接热	Ta=260℃,T= 10s; Dipped up to a place 1-1.5mm apart from its body	Sample size : 20 pcs Acc: 0/ 1	各封装产品随机三个型号每月检测一次

八、包装

a) 包装应防震、 防潮、 防压、无破损。

c) 内包装有出厂检验合格证，生产日期、产品规格型号、 内包装数量。

d) 外包装上有制造厂名称、产品规格型号、 内包装数量。