

广东协铖微电子科技有限公司

Switching Transistors 开关三极管

XCS2222/A

DESCRIPTION & FEATURES 概述及特点

Low Leakage Current:

$I_{CEX}=10\text{nA}(\text{Max.})$; $V_{CE}=60\text{V}$, $V_{EB(\text{OFF})}=3\text{V}$

Low Saturation Voltage:

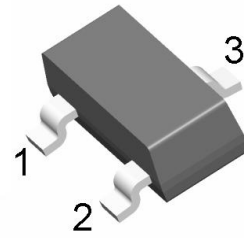
$V_{CE(\text{sat})}=0.3\text{V}(\text{Max.})$; $I_C=150\text{mA}$, $I_B=15\text{mA}$

Complementary to the 2907S/2907AS

PIN ASSIGNMENT 引脚说明

PIN NAME 管脚符号	PIN NUMBER 引脚序号	FUNCTION 功能
	SOT-23	
B	1	BASE
E	2	EMITTER
C	3	COLLECTOR

SOT-23



MAXIMUM RATINGS($T_a=25^\circ\text{C}$) 最大额定值

CHARACTERISTIC 特性参数	Symbol 符号		Rating 额定值	Unit 单位
Collector-Emitter Voltage 集电极-发射极电压	V_{CEO}	XCS2222	30	Vdc
		XCS2222A	40	
Collector-Base Voltage 集电极-基极电压	V_{CBO}	XCS2222	60	Vdc
		XCS2222A	75	
Emitter-Base Voltage 发射极-基极电压	V_{EBO}	XCS2222	5	Vdc
		XCS2222A	6	
Collector Current—Continuous 集电极电流-连续	I_C		600	mAdc

THERMAL CHARACTERISTICS 热特性

CHARACTERISTIC 特性参数	Symbol 符号	Max 最大值	Unit 单位
Total Device Dissipation 总耗散功率 FR-5 Board(1) ($T_A=25^\circ\text{C}$ 环境温度= 25°C)	P_D	225	mW
Derate above 25°C 超过 25°C 递减		1.8	mW/ $^\circ\text{C}$
Thermal Resistance Junction to Ambient 热阻	R_{JA}	556	$^\circ\text{C}/\text{W}$
Total Device Dissipation Alumina Substrate,(2) $T_A=25^\circ\text{C}$ 总耗散功率 氧化铝衬底	P_D	300	mW
Derate above 25°C 超过 25°C 递减		2.4	mW/ $^\circ\text{C}$
Thermal Resistance Junction to Ambient 热阻	R_{JA}	417	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature 结温和储存温度	T_j , T_{stg}	150, -55 to +150	$^\circ\text{C}$

DEVICE MARKING 打标

XCS2222=M1B

XCS2222A=1P

ELECTRICAL CHARACTERISTICS 电特性

($T_A=25^\circ\text{C}$ unless otherwise noted 如无特殊说明, 温度为 25°C)

Characteristic 特性参数	Symbol 符号		Test Condition 测试条件	Min 最小值	Type 典型值	Max 最大值	Unit 单位
Collector Cutoff Current 集电极截止电流	I_{CBO}	XCS2222	$V_{CB}=50\text{Vdc}$	—	—	0.01	μAdc
		XCS2222A	$V_{CB}=60\text{Vdc}$	—	—	0.01	
		XCS2222	$V_{CB}=50\text{Vdc}$, $I_E=0$, $T_A=125^\circ\text{C}$	—	—	10	
		XCS2222A	$V_{CB}=60\text{Vdc}$, $I_E=0$, $T_A=125^\circ\text{C}$	—	—	10	
Emitter-Cutoff Current 发射极截止电流	I_{EBO}	XCS2222A	$V_{EB}=3.0\text{Vdc}$, $I_C=0$	—	—	100	nAdc
Collector Cutoff Current 集电极截止电流	I_{CEX}	XCS2222A	$V_{CE}=60\text{Vdc}$, $I_{EB(\text{off})}=3.0\text{Vdc}$	—	—	10	nAdc

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Base Cutoff Current 基极截止电流	I_{BEX}	XCS2222A	$V_{CE}=60V_{dc}$, $V_{EB}=3.0 V_{dc}$	—	—	20	nAdc
Collector-Emitter Breakdown Voltage(3) 集电极-发射极击穿电压	$V_{(BR)CEO}$	XCS2222	$I_C=10mAdc$, $I_B=0$	30	—	—	Vdc
		XCS2222A		40			
Collector-Base Breakdown Voltage集电极-基极击穿电压	$V_{(BR)CBO}$	XCS2222	$I_C=10\mu Adc$, $I_E=0$	60	—	—	Vdc
		XCS2222A		75			
Emitter-Base Breakdown Voltage 发射极-基极击穿电压	$V_{(BR)EBO}$	XCS2222	$I_E=10\mu Adc$, $I_C=0$	5	—	—	Vdc
		XCS2222A		6			
DC Current Gain 直流电流增益	h_{FE}	XCS2222/A	$I_C=0.1mAdc$, $V_{CE}=10V_{dc}$	35	—	—	—
		XCS2222/A	$I_C=1mAdc$, $V_{CE}=10V_{dc}$	50	—	—	
		XCS2222/A	$I_C=10mAdc$, $V_{CE}=10V_{dc}$	75	—	—	
		XCS2222A	$I_C=1mAdc$, $V_{CE}=10V_{dc}$ $T_A=-55^{\circ}C$	35	—	—	
		XCS2222/A	$I_C=150mAdc$, $V_{CE}=10V_{dc}$	100	—	300	
		XCS2222	$I_C=500mAdc$, $V_{CE}=10V_{dc}$	30	—	—	
		XCS2222A		40	—	—	
Collector-Emitter Saturation Voltage(3) 集电极发射极饱和压降	$V_{CE(sat)}$	XCS2222	$I_C=150mAdc$, $I_B=15mAdc$	—	—	0.4	Vdc
		XCS2222A		—	—	0.3	
		XCS2222	$I_C=500mAdc$, $I_B=50mAdc$	—	—	1.6	
		XCS2222A		—	—	1.0	
Base-Emitter Saturation Voltage 基极-发射极饱和压降	$V_{BE(sat)}$	XCS2222	$I_C=150mAdc$, $I_B=15mAdc$	—	—	1.3	Vdc
		XCS2222A		0.6	—	1.2	
		XCS2222	$I_C=500mAdc$, $I_B=50mAdc$	—	—	2.6	
		XCS2222A		—	—	2.0	
Current-Gain-Bandwidth Product 电流增益-带宽乘积	f_T	XCS2222	$I_C=10mAdc$, $V_{CE}=20V_{dc}$, $f=100 MHz$	250	—	—	MHz
		XCS2222A		300	—	—	
Output Capacitance 输出电容	C_{obo}	XCS2222/A	$V_{CB}=10V_{dc}$, $I_E=0$, $f=1.0MHz$	—	—	8.0	pF
INput Capacitance输入电容	C_{ibo}	XCS2222	$V_{EB}=0.5V_{dc}$, $I_C=0$, $f=1.0MHz$	—	—	30	pF
		XCS2222A		—	—	25	

SWITCHING CHARACTERISTICS 开关特性

Delay Time 延迟时间	t_d	$V_{CC}=30V_{dc}$, $V_{BE}=-0.5V_{dc}$, $I_C=150mAdc$, $I_{B1}=15mAdc$	—	—	10	nS
Rise Time 上升时间	t_r		—	—	25	
Storage Time 储存时间	t_s	$V_{CC}=30V_{dc}$, $I_C=150mAdc$, $I_{B1}=I_{B2}=15mAdc$	—	—	225	nS
Fall Time 下降时间	t_f		—	—	60	

1. FR-5=1.0×0.75×0.062in.
2. Alumina=0.4×0.3×0.024in, 99.5%alumina.
3. Pulse Width≤300μS; Duty Cycle≤2.0%.

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CLASSIFICATION OF hFE(1) XCS2222

RANK	L	H
RANGE	100-200	200-300
MARKING	M1B	

CLASSIFICATION OF hFE(1) XCS2222A

RANK	L	H
RANGE	100-200	200-300
MARKING	1P	