

Switching Transistors 開關三極管

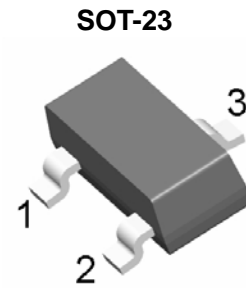
FHS2222/A

DESCRIPTION & FEATURES 概述及特點

Low Leakage Current :
 $I_{CEX}=10nA(Max.)$; $V_{CE}=60V$, $V_{EB(OFF)}=3V$
 Low Saturation Voltage :
 $V_{CE(sat)}=0.3V(Max.)$; $I_C=150mA$, $I_B=15mA$
 Complementary to the 2907S/2907AS

PIN ASSIGNMENT 引腳說明

PIN NAME 管腳符號	PIN NUMBER 引腳序號	FUNCTION 功能
	SOT-23	
B	1	BASE
E	2	EMITTER
C	3	COLLECTOR



MAXIMUM RATINGS($T_a=25^\circ C$) 最大額定值

CHARACTERISTIC 特性參數	Symbol 符號	Rating 額定值	Unit 單位
Collector-Emitter Voltage 集電極-發射極電壓	V_{CEO}	FHS2222	30
		FHS2222A	40
Collector-Base Voltage 集電極-基極電壓	V_{CBO}	FHS2222	60
		FHS2222A	75
Emitter-Base Voltage 發射極-基極電壓	V_{EBO}	FHS2222	5
		FHS2222A	6
Collector Current—Continuous 集電極電流-連續	I_C	600	mAdc

THERMAL CHARACTERISTICS 熱特性

CHARACTERISTIC 特性參數	Symbol 符號	Max 最大值	Unit 單位
Total Device Dissipation 總耗散功率 FR-5 Board(1) ($T_A=25^\circ C$ 環境溫度= $25^\circ C$) Derate above $25^\circ C$ 超過 $25^\circ C$ 遞減	P_D	225	mW
		1.8	mW/ $^\circ C$
Thermal Resistance Junction to Ambient 熱阻	R_{JA}	556	$^\circ C/W$
Total Device Dissipation Alumina Substrate, (2) $T_A=25^\circ C$ 總耗散功率 氧化鋁襯底 Derate above $25^\circ C$ 超過 $25^\circ C$ 遞減	P_D	300	mW
		2.4	mW/ $^\circ C$
Thermal Resistance Junction to Ambient 熱阻	R_{JA}	417	$^\circ C/W$
Junction and Storage Temperature 結溫和儲存溫度	T_j , T_{stg}	150 , -55 to +150	$^\circ C$

DEVICE MARKING 打標

FHS2222=1B , FHS2222A=1P

ELECTRICAL CHARACTERISTICS 電特性

($T_A=25^\circ C$ unless otherwise noted 如無特殊說明, 溫度為 $25^\circ C$)

Characteristic 特性參數	Symbol 符號	Test Condition 測試條件	Min 最小值	Type 典型值	Max 最大值	Unit 單位
Collector Cutoff Current 集電極截止電流	I_{CBO}	FHS2222	$V_{CB}=50Vdc$	—	—	0.01
		FHS2222A	$V_{CB}=60Vdc$	—	—	0.01
		FHS2222	$V_{CB}=50Vdc$, $I_E=0$, $T_A=125^\circ C$	—	—	10
		FHS2222A	$V_{CB}=60Vdc$, $I_E=0$, $T_A=125^\circ C$	—	—	10
Emitter-Cutoff Current 發射極截止電流	I_{EBO}	FHS2222A	$V_{EB}=3.0Vdc$, $I_C=0$	—	—	100
Collector Cutoff Current 集電極截止電流	I_{CEX}	FHS2222A	$V_{CE}=60Vdc$, $I_{EB(off)}=3.0 Vdc$	—	—	10

Switching Transistors 開關三極管

FHS2222/A

Base Cutoff Current 基極截止電流	I_{BEX}	FHS2222A	$V_{CE}=60Vdc, V_{EB}=3.0Vdc$	—	—	20	nAdc
Collector-Emitter Breakdown Voltage(3) 集電極-發射極擊穿電壓	$V_{(BR)CEO}$	FHS2222	$I_C=10mAdc, I_B=0$	30	—	—	Vdc
		FHS2222A		40			
Collector-Base Breakdown Voltage 集電極-基極擊穿電壓	$V_{(BR)CBO}$	FHS2222	$I_C=10\mu Adc, I_E=0$	60	—	—	Vdc
		FHS2222A		75			
Emitter-Base Breakdown Voltage 發射極-基極擊穿電壓	$V_{(BR)EBO}$	FHS2222	$I_E=10\mu Adc, I_C=0$	5	—	—	Vdc
		FHS2222A		6			
DC Current Gain 直流電流增益	h_{FE}	FHS2222/A	$I_C=0.1mAdc, V_{CE}=10Vdc$	35	—	—	—
		FHS2222/A	$I_C=1mAdc, V_{CE}=10Vdc$	50	—	—	
		FHS2222/A	$I_C=10mAdc, V_{CE}=10Vdc$	75	—	—	
		FHS2222A	$I_C=1mAdc, V_{CE}=10Vdc, T_A=-55^\circ C$	35	—	—	
		FHS2222/A	$I_C=150mAdc, V_{CE}=10Vdc$	100	—	300	
		FHS2222	$I_C=500mAdc, V_{CE}=10Vdc$	30	—	—	
		FHS2222A	$I_C=500mAdc, V_{CE}=10Vdc$	40	—	—	
Collector-Emitter Saturation Voltage(3) 集電極發射極飽和壓降	$V_{CE(sat)}$	FHS2222	$I_C=150mAdc, I_B=15mAdc$	—	—	0.4	Vdc
		FHS2222A	$I_C=150mAdc, I_B=15mAdc$	—	—	0.3	
		FHS2222	$I_C=500mAdc, I_B=50mAdc$	—	—	1.6	
		FHS2222A	$I_C=500mAdc, I_B=50mAdc$	—	—	1.0	
Base-Emitter Saturation Voltage 基極-發射極飽和壓降	$V_{BE(sat)}$	FHS2222	$I_C=150mAdc, I_B=15mAdc$	—	—	1.3	Vdc
		FHS2222A	$I_C=150mAdc, I_B=15mAdc$	0.6	—	1.2	
		FHS2222	$I_C=500mAdc, I_B=50mAdc$	—	—	2.6	
		FHS2222A	$I_C=500mAdc, I_B=50mAdc$	—	—	2.0	
Current-Gain-Bandwidth Product 電流增益-帶寬乘積	f_T	FHS2222	$I_C=10mAdc, V_{CE}=20Vdc, f=100MHz$	250	—	—	MHz
		FHS2222A	$I_C=10mAdc, V_{CE}=20Vdc, f=100MHz$	300	—	—	
Output Capacitance 輸出電容	C_{obo}	FHS2222/A	$V_{CB}=10Vdc, I_E=0, f=1.0MHz$	—	—	8.0	pF
Input Capacitance 輸入電容	C_{ibo}	FHS2222	$V_{EB}=0.5Vdc, I_C=0, f=1.0MHz$	—	—	30	pF
		FHS2222A	$V_{EB}=0.5Vdc, I_C=0, f=1.0MHz$	—	—	25	

SWITCHING CHARACTERISTICS 開關特性

Delay Time 延遲時間	t_d	$V_{CC}=30Vdc, V_{BE}=-0.5Vdc, I_C=150mAdc, I_{B1}=15mAdc$	—	—	10	nS
Rise Time 上升時間	t_r		—	—	25	
Storage Time 儲存時間	t_s	$V_{CC}=30Vdc, I_C=150mAdc, I_{B1}=I_{B2}=15mAdc$	—	—	225	nS
Fall Time 下降時間	t_f		—	—	60	

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