

■ MAXIMUM RATINGS 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}	-40	Vdc
Collector-Base Voltage 集電極-基極電壓	V_{CBO}	-40	Vdc
Emitter-Base Voltage 發射極-基極電壓	V_{EBO}	-5.0	Vdc
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) $T_A=25^{\circ}\text{C}$ 環境溫度為 25°C Derate above 25°C 超過 25°C 遞減	P_D	225 1.8	mW mW/ $^{\circ}\text{C}$
Total Device Dissipation 總耗散功率 Alumina Substrate, 氧化鋁襯底(2) $T_A=25^{\circ}\text{C}$ 環境溫度為 25°C Derate above 25°C 超過 25°C 遞減	P_D	300 2.4	mW mW/ $^{\circ}\text{C}$
Thermal Resistance Junction to Ambient 熱阻	$R_{\theta JA}$	417	$^{\circ}\text{C}/\text{W}$
Junction and Storage Temperature 結溫和儲存溫度	T_J, T_{stg}	150 $^{\circ}\text{C}$, -55to+150 $^{\circ}\text{C}$	

■ DEVICE MARKING 打標

MMBT4403=2T



MMBT4403

■ELECTRICAL CHARACTERISTICS 電特性

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

■OFF CHARACTERISTICS 截止電特性

Characteristic 特性參數	Symbol 符號	Min 最小值	Max 最大值	Unit 單位
Collector-Emitter Breakdown Voltage(3) 集電極-發射極擊穿電壓($I_C=-1.0\text{mA}$, $I_B=0$)	$V_{(BR)CEO}$	-40	—	Vdc
Collector-Base Breakdown Voltage 集電極基極擊穿電壓($I_C=-0.1\text{mA}$, $I_E=0$)	$V_{(BR)CBO}$	-40	—	Vdc
Emitter-Base Breakdown Voltage 發射極基極擊穿電壓($I_E=-0.1\text{mA}$, $I_C=0$)	$V_{(BR)EBO}$	-5.0	—	Vdc
Base Cutoff Current 基極截止電流 ($V_{CE}=-35\text{Vdc}$, $V_{EB}=-0.4\text{Vdc}$)	I_{BEV}	—	0.1	μA
Collector Cutoff Current 集電極截止電流 ($V_{CE}=-35\text{Vdc}$, $V_{EB}=-0.4\text{Vdc}$)	I_{CEX}	—	0.1	μA

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

■ON CHARACTERISTICS 導通電特性

Characteristic 特性參數	Symbol 符號	Min 最小值	Max 最大值	Unit 單位
DC Current Gain 直流電流增益	H_{FE}			—
($I_C=-0.1\text{mA}$, $V_{CE}=-1.0\text{Vdc}$)		30	—	
($I_C=-1.0\text{mA}$, $V_{CE}=-1.0\text{Vdc}$)		60	—	
($I_C=-10\text{mA}$, $V_{CE}=-1.0\text{Vdc}$)		100	—	
($I_C=-150\text{mA}$, $V_{CE}=-2.0\text{Vdc}$)(3)		100	300	
($I_C=-500\text{mA}$, $V_{CE}=-2.0\text{Vdc}$)(3)		20	—	
Collector-Emitter Saturation Voltage 集電極-發射極飽和壓降	$V_{CE(sat)}$			Vdc
($I_C=-150\text{mA}$, $I_B=-15\text{mA}$)		—	-0.4	
($I_C=-500\text{mA}$, $I_B=-50\text{mA}$)		—	-0.75	
Base-Emitter Saturation Voltage 基極-發射極飽和壓降	$V_{BE(sat)}$			Vdc
($I_C=-150\text{mA}$, $I_B=-15\text{mA}$)		-0.75	-0.95	
($I_C=-500\text{mA}$, $I_B=-50\text{mA}$)		—	-1.3	



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■SMALL-SIGNAL CHARACTERISTICS 小信號特性

Characteristic 特性參數	Symbol 符號	Min 最小值	Max 最大值	Unit 單位
Current-Gain-Bandwidth Product 電流增益帶寬乘積 ($I_C=-20\text{mA}$, $V_{CE}=-10\text{V}$, $f=100\text{MHz}$)	f_T	200	—	MHz
Collector-Base Capacitance 集電極基極電容 ($V_{CB}=-10\text{V}$, $I_E=0$, $f=1.0\text{MHz}$)	C_{cb}	—	8.5	pF
Emitter-Base Capacitance 發射極基極電容 ($V_{BE}=-0.5\text{V}$, $I_C=0$, $f=1.0\text{MHz}$)	C_{cb}	—	30	pF
Input Impedance 輸入阻抗 ($I_C=-1.0\text{mA}$, $V_{CE}=-10\text{V}$, $f=1.0\text{kHz}$)	h_{ie}	1.5	15	k Ω
Voltage Feedback Ratio 電壓反饋係數 ($I_C=-1.0\text{mA}$, $V_{CE}=-10\text{V}$, $f=1.0\text{kHz}$)	h_{re}	0.1	8.0	$\times 10^{-4}$
Small-Signal Current Gain 小信號電流增益 ($I_C=-1.0\text{mA}$, $V_{CE}=-10\text{V}$, $f=1.0\text{kHz}$)	h_{fe}	60	500	—
Output Admittance 輸出導納 ($I_C=-1.0\text{mA}$, $V_{CE}=-10\text{V}$, $f=1.0\text{kHz}$)	h_{oe}	1.0	100	μmhos

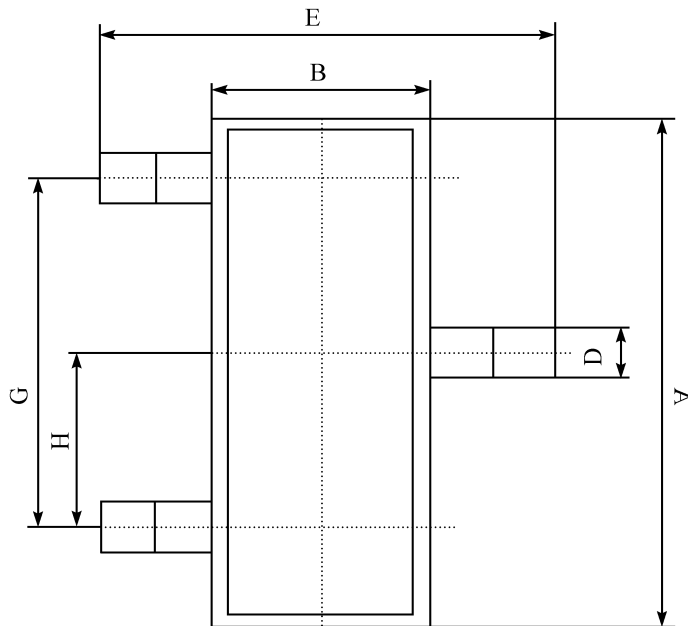
■SWITCHING CHARACTERISTICS 開關特性

Delay Time 延遲時間	(V _{cc} =-30Vdc, V _{EB} =-2.0Vdc I _c =-150mA, I _{B1} =-15mA)	t _d	—	15	ns
Rise Time 上升時間		t _r	—	20	
Storage Time 儲存時間	(V _{cc} =-30Vdc, I _c =-150mA, I _{B1} =I _{B2} =-15mA)	t _s	—	225	ns
Fall Time 下降時間		t _f	—	30	

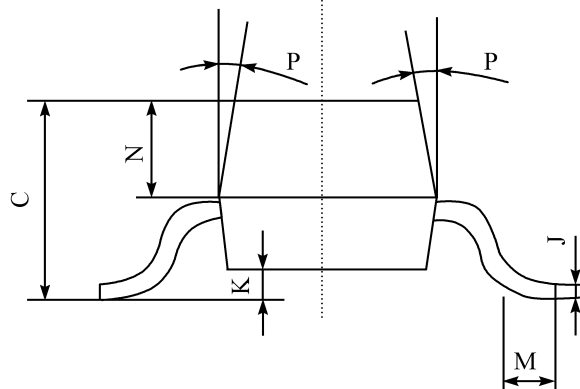


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■ DIMENSION 外形封裝尺寸



序號	數值及公差
A	2.90 ± 0.10
B	1.30 ± 0.10
C	1.00 ± 0.10
D	0.40 ± 0.10
E	2.40 ± 0.20
G	1.90 ± 0.10
H	0.95 ± 0.05
J	0.13 ± 0.05
K	$0.00 - 0.10$
M	≥ 0.2
N	0.60 ± 0.10
P	$7 \pm 2^\circ$



This datasheet presents technical data of Tak Cheong's Silicon Rectifier Diodes. Complete specifications for the individual devices are provided in the form of datasheets. A comprehensive Selector Guide is included to simplify the task of choosing the best set of components required for a specific application. For additional information, please visit our website <http://www.takcheong.com>.

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