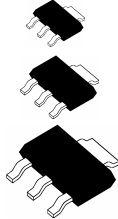
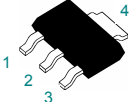
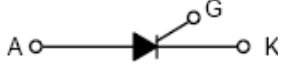


■ QUICK REFERENCE 【參考特性】

產品型號 Part Number	工業型號 Industry Part №	通態電流均方值 $I_{T(RMS)}$ (A)	斷態重複峰值電壓 V_{DRM} / V_{RRM} (V)	門極觸發電流 I_{GT} ($\mu A / mA$)	封裝外形 Package	包裝方式 Packing	元件標識 Marking
HBT169DS	BT169GW	1A	400 V	$\leq 200\mu A$	型號後綴 "S" SOT-223	SOT-223 2500Pcs/Reel 10000Pcs/Box 貼片元件 載帶卷盤包裝 每卷2500支 0.03g / Pcs 每枚重量0.03克	
HBT169MS	BT148W-500R BT148W-600R P0102XN X0202XN		600 V				
HBT169NS	MCR08BT1 MCR08MT1 S08M02-600D		800 V				
說明 Explain	①大電流高壓規格機種(特殊品種)可定制至1.2A ②觸發電流可細分至多個規格: 1~5, 5~10, 10~30, 30~60, 50~100, 50~200, 100~200 μA						

■ PINNING: SOT-223 (SC-73) SMD Tape & Reel

【片狀-表面貼SOT-223封裝, 卷帶卷盤包裝】 "S"表示 SOT-223

Pin 管腳排列	Symbol 對應極性	Description 極性名詞	Description 極性含義	Practicality in Pin Arrange 元件實物與管腳排列對照	Pin Polarity Circuit diagram 腳位與極性 電路符號表示
1	K	Cathode	陰極		1=K 2=A 3=G 4=A=2 
2	A	Anode	陽極		
3	G	Gate	門-控制極		
4	A	Anode	陽極		

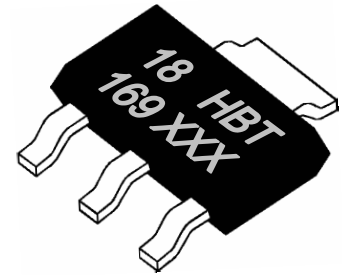
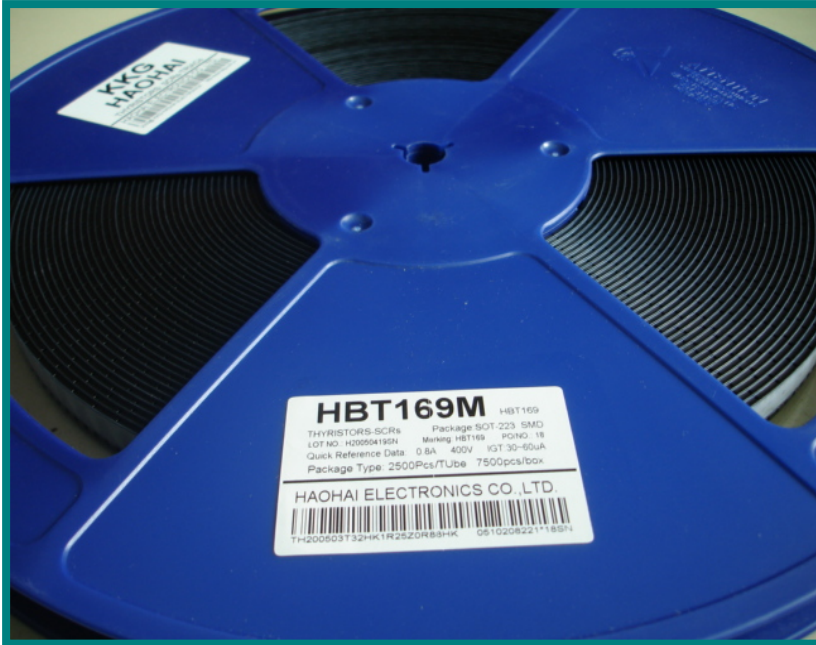
■ ABSOLUTE RATINGS (Limiting Values) 【額定值參數】

SYMBOL 符號表示	Parameter & Test Conditions 符號含義 及 參數測試條件說明	Value 數值	Unit 單位
$I_{T(RMS)}$	通態電流均方值: On-State RMS Current ($T_c=80^\circ C$) 180 $^\circ C$ Conduction Angles	1	A
I_{TSM}	通態浪湧電流: 1/2周期, 60Hz, 正弦波, 不重複 Peak Non-Repetitive Surge Current (1/2 Cycle, Sine Wave, 60Hz, $T_j=25^\circ C$)	10	
I_{GM}	正向門極最大電流: Forward Peak Gate Current (Pulse Width $\leq 1\mu S$, $T_c=25^\circ C$)	1	
I^2t	週期電流平方時間積: Circuit Fusing Consideration ($t=10ms$)	0.45	A ² ses
P_{GM}	門極平均峰值功率: Forward Peak Gate Power (Pulse Width $\leq 1\mu S$, $T_c=25^\circ C$)	2	W
$P_{G(AV)}$	門極平均散耗功率: Forward Average Gate Power($t=20ms$, $T_c=80^\circ C$)	0.1	
V_{DRM} or V_{RRM}	斷態重複峰值電壓: Peak Repetitive Off-State Voltage ($T_j=-40\sim 110^\circ C$, Sine Wave, 50~60Hz; Gate Open) (見參考特性對應說明)	400~800	V
T_j	工作結溫: Operating Junction Temperature Range @ Rate V_{RRM} and V_{DRM}	-40 ~ +125	$^\circ C$
T_{stg}	貯存溫度: Storage Temperature Range	-40 ~ +150	
T_L	引腳承受焊錫極限溫度: Lead Solder Temperature (1/16, from case, 10 secs max)	250	

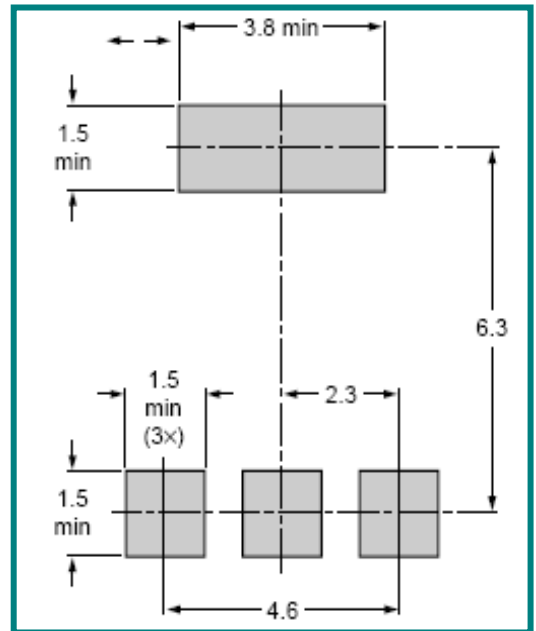
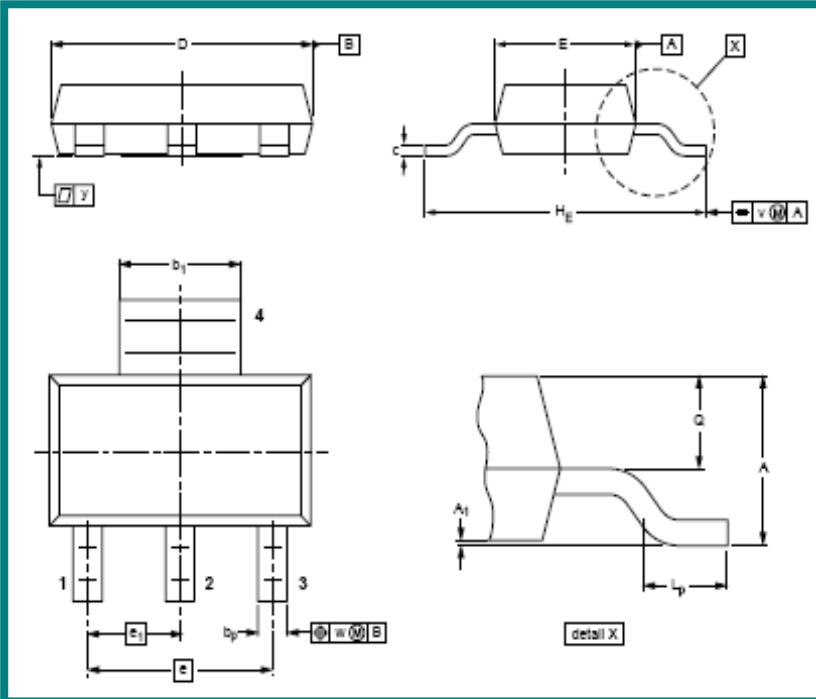
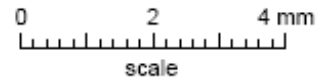
■ ELECTRICAL CHARACTERISTICS ($T_j=25^\circ C$ Unless Otherwise Noted) 【電參數】

SYMBOL 符號表示	Parameter & Test Conditions 符號含義及測試條件說明	Min 最小值	Typ 典型值	Max 最大值	Unit 單位
I_{GT}	門極觸發電流: $V_D=12V$, $I_T=10mA$	1	50	200	μA
I_H	維持電流: Holding Current ($V_D=12V$, $I_{GT}=0.5mA$, $R_{GK}=1K\Omega$) $T_c=25^\circ C$	→	2	5	mA
I_L	最大接入電流: Latching Current ($V_D=12V$, $I_{GT}=0.5mA$, $R_{GK}=1K\Omega$) $T_c=25^\circ C$	→	2	6	
V_{GT}	門極觸發電壓: $V_D=12V$, $I_T=10mA$, Gate open circuit	→	0.5	0.8	V
		$V_D=12V$, $I_T=10mA$, Gate open circuit, $V_D=V_{DRM}$, $I_T=10mA$	0.2	0.3	
V_{TM}	峰值通態電壓: Peak Forward On-State Voltage ($I_{TM}=1A$ Peak@ $T_a=25^\circ C$)	→	1.25	1.70	V/ μs
dv/dt	斷態臨界電壓上升率: Critical Rate of Rise of Off-State Voltage ($R_{GK}=1K\Omega$)	500	800	→	
di/dt	通態臨界電流上升率: Critical Rate of Rise of On-State Current	→	→	50	A/ μs
tgt	門極控制延遲時間: Gate Controlled Delay Time ($I_{TM}=2V$, $V_D=V_{DRM}$, $I_{GT}=10mA$)	→	2	→	μs
tq	反向轉換關斷時間: Commutated Turn-off Time ($I_{TM}=1.6A$, $T_j=125^\circ C$)	→	100	→	
Rth(j-Tab)	熱阻--結到散熱片: Thermal Resistance-Junction-to-Case	→	→	15	$^\circ C/W$
Rth(j-a)	熱阻--結到外環境: Thermal Resistance-Junction-to-Ambient	→	150	→	

MOUNTING INSTRUCTIONS: 封裝尺寸說明 (尺寸單位:毫米)



SOT-223



封裝尺寸 表示單位	UNIT	A	A1	bp	b1	c	D	E	e	e1	HE	Lp	Q	V	W	Y
	mm	1.8 1.5	0.10 0.01	0.8 0.6	3.1 2.9	0.32 0.22	6.7 6.3	3.7 3.3	4.6 2.3	7.3 6.7	1.1 0.7	0.95 0.85	0.2	0.1	0.1	

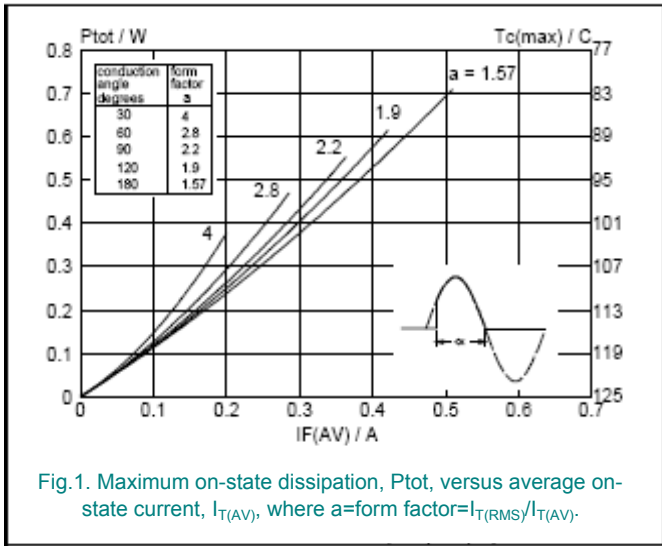


Fig.1. Maximum on-state dissipation, P_{tot} , versus average on-state current, $I_{T(AV)}$, where $a = \text{form factor} = I_{T(RMS)} / I_{T(AV)}$.

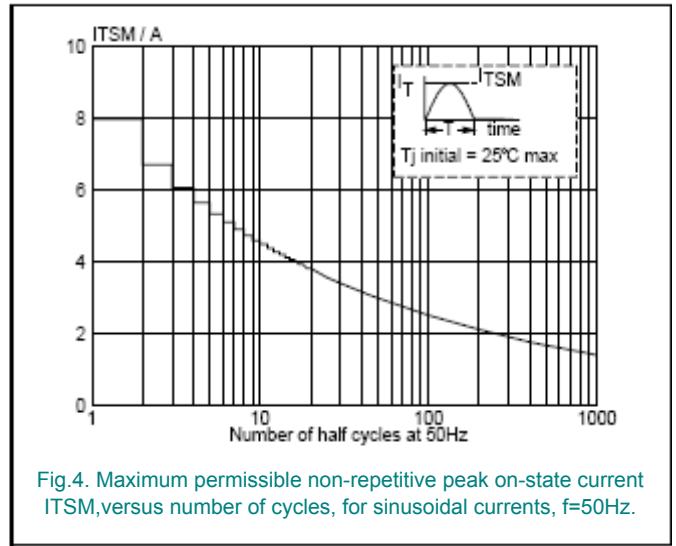


Fig.4. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus number of cycles, for sinusoidal currents, $f=50\text{Hz}$.

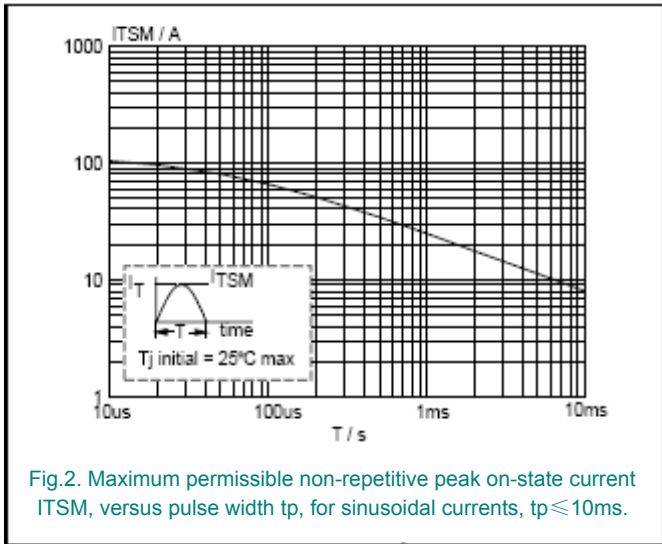


Fig.2. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus pulse width t_p , for sinusoidal currents, $t_p \leq 10\text{ms}$.

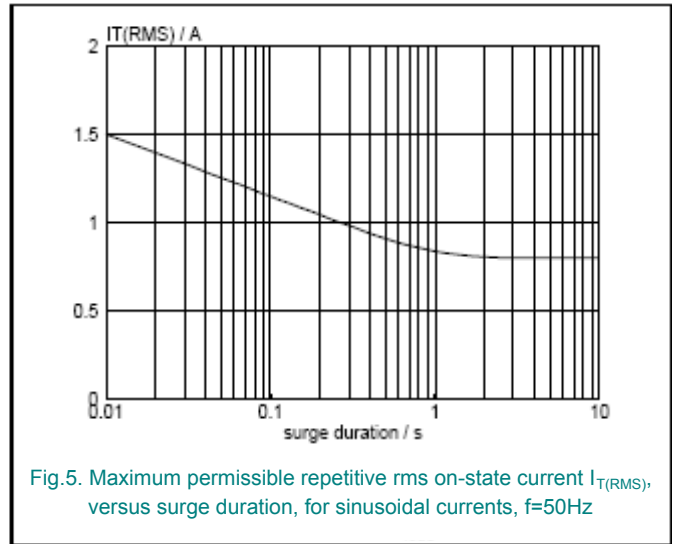


Fig.5. Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, $f=50\text{Hz}$.

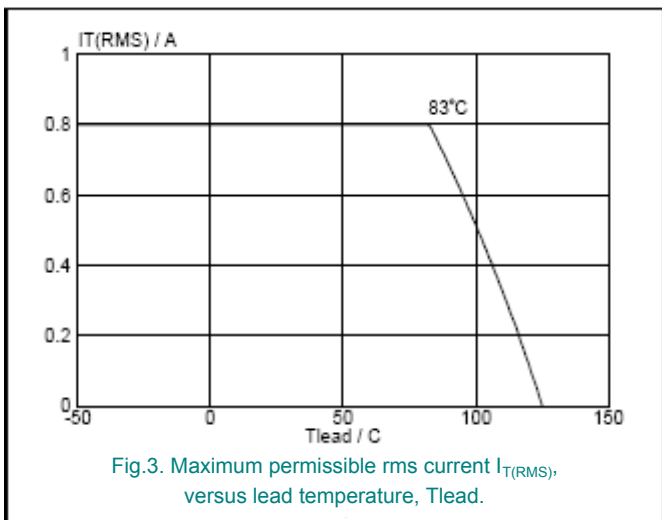


Fig.3. Maximum permissible rms current $I_{T(RMS)}$, versus lead temperature, T_{lead} .

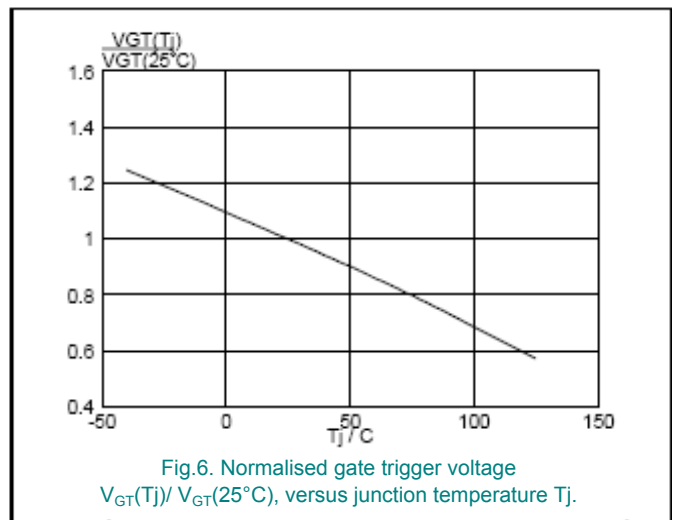


Fig.6. Normalised gate trigger voltage $V_{GT}(T_j) / V_{GT}(25^\circ\text{C})$, versus junction temperature T_j .

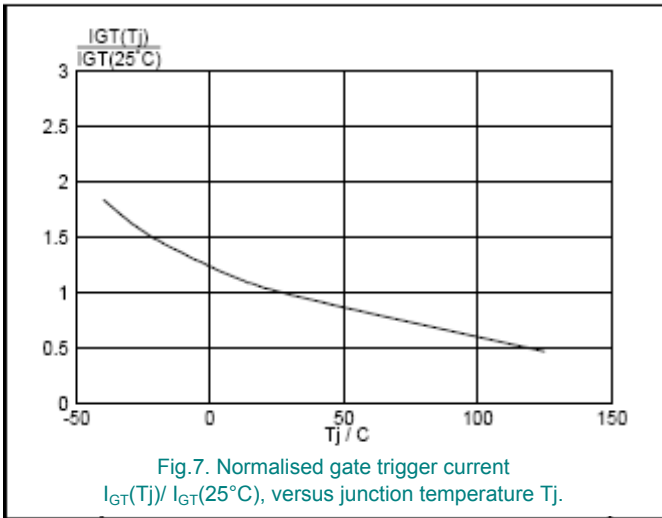


Fig.7. Normalised gate trigger current $I_{GT}(T_j) / I_{GT}(25^\circ\text{C})$, versus junction temperature T_j .

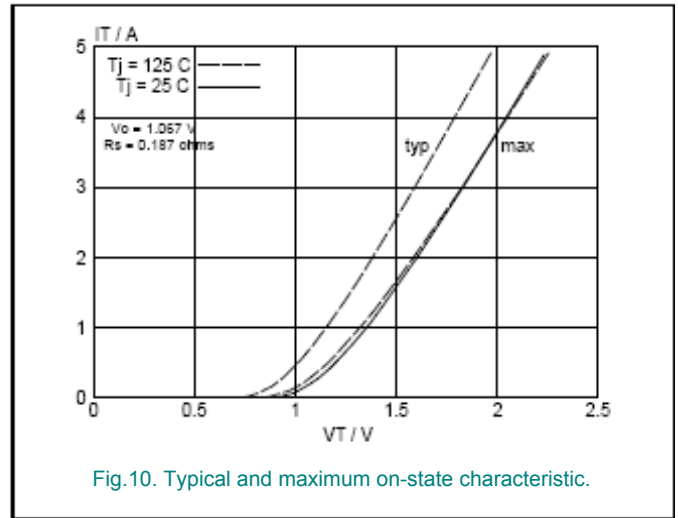


Fig.10. Typical and maximum on-state characteristic.

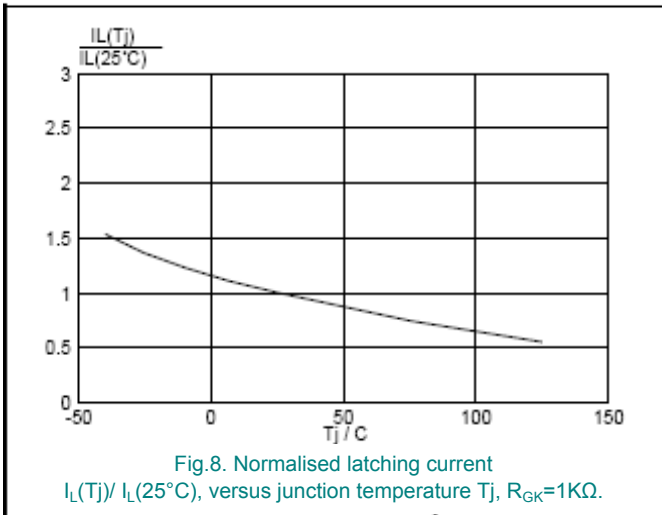


Fig.8. Normalised latching current $I_L(T_j) / I_L(25^\circ\text{C})$, versus junction temperature T_j , $R_{GK}=1\text{K}\Omega$.

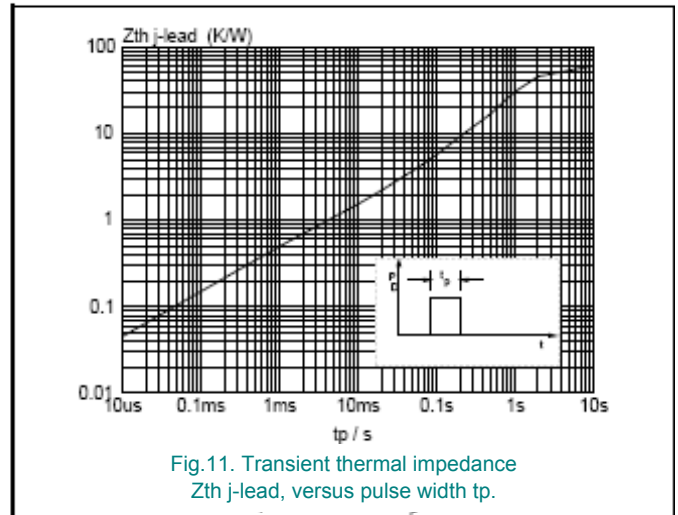


Fig.11. Transient thermal impedance $Z_{th \text{ j-lead}}$, versus pulse width t_p .

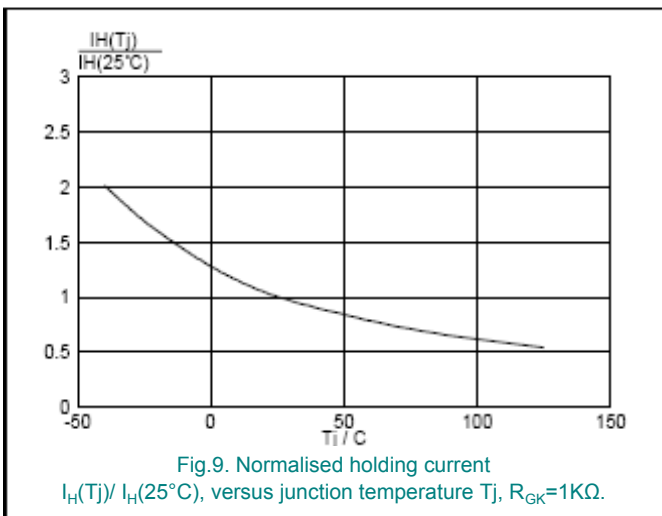


Fig.9. Normalised holding current $I_H(T_j) / I_H(25^\circ\text{C})$, versus junction temperature T_j , $R_{GK}=1\text{K}\Omega$.

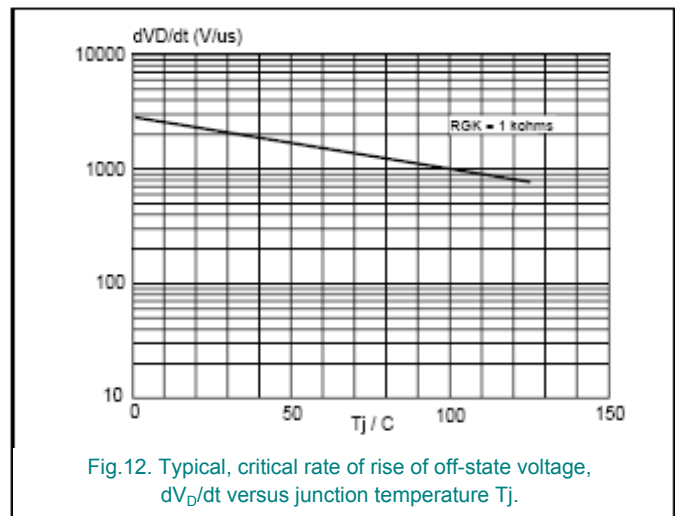


Fig.12. Typical, critical rate of rise of off-state voltage, dV_D/dt versus junction temperature T_j .