

Bipolar Transistor

(-)50 V, (-)8 A, Low $V_{CE(sat)}$,
(PNP)NPN Single TP/TP-FA

2SA2040, 2SC5707

特長

- FBET, MBIT プロセス採用
- スイッチングスピードが速い
- 電流量が大きい
- 許容損失が大きい
- コレクタ・エミッタ飽和電圧が低い
- These are Pb-Free Devices

用途

- DC/DC コンバータ, リレードライブ, ランプドライブ,
モータドライブ, フラッシュ

() 内は 2SA2040 の場合を示す

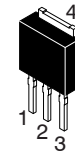
絶対最大定格 ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

項目	記号	条件	定格値	Unit
コレクタ・ベース電圧	V_{CBO}		(-50)100	V
コレクタ・エミッタ電圧	V_{CES}		(-50)100	V
			(-)50	V
エミッタ・ベース電圧	V_{EBO}		(-)6	V
コレクタ電流	I_C		(-)8	A
コレクタ電流 (パルス)	I_{CP}		(-)11	A
ベース電流	I_B		(-)2	A
コレクタ損失	P_C		1.0	W
		$T_c = 25^\circ\text{C}$	15	
接合部温度	T_j		150	$^\circ\text{C}$
保存周囲温度	T_{stg}		-55 to +150	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

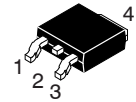
(参考訳)

最大定格を超えるストレスは、デバイスにダメージを与える危険性があります。これらの定格値を超えた場合は、デバイスの機能性を損ない、ダメージが生じ、信頼性に影響を及ぼす危険性があります。



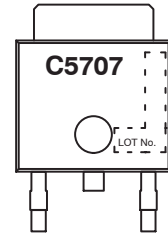
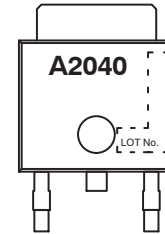
IPAK / TP
CASE 369AJ

- 1: Base
2: Collector
3: Emitter
4: Collector

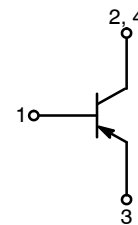


DPAK / TP-FA
CASE 369AH

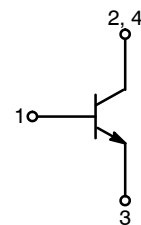
マーキング



電氣的接続図



2SA2040



2SC5707

ORDERING INFORMATION

Device	Package	Shipping [†]
2SA2040-E	IPAK / TP (Pb-Free)	500 Units / Bulk
2SC5707-E	IPAK / TP (Pb-Free)	500 Units / Bulk
2SA2040-TL-E	DPAK / TP-FA (Pb-Free)	700 / Tape & Reel
2SC5707-TL-E	DPAK / TP-FA (Pb-Free)	700 / Tape & Reel

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, [BRD8011/D](#).

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電氣的特性 ELECTRICAL CHARACTERISTICS (Ta = 25°C)

項目	記号	条件	定格値			Unit
			Min	Typ	Max	
コレクタシャ断電流	I_{CBO}	$V_{CB} = (-)40\text{ V}, I_E = 0\text{ A}$	—	—	$(-)0.1$	μA
エミッタシャ断電流	I_{EBO}	$V_{EB} = (-)4\text{ V}, I_C = 0\text{ A}$	—	—	$(-)0.1$	μA
直流電流増幅率	h_{FE}	$V_{CE} = (-)2\text{ V}, I_C = (-)500\text{ mA}$	200	—	560	
利得帯域幅積	f_T	$V_{CE} = (-)10\text{ V}, I_C = (-)500\text{ mA}$	—	(290)330	—	MHz
出力容量	C_{ob}	$V_{CB} = (-)10\text{ V}, f = 1\text{ MHz}$	—	(50)28	—	pF
コレクタ・エミッタ飽和電圧	$V_{CE(sat)1}$	$I_C = (-)3.5\text{ A}, I_B = (-)175\text{ mA}$	—	$(-230)160$	$(-390)240$	mV
	$V_{CE(sat)2}$	$I_C = (-)2\text{ A}, I_B = (-)40\text{ mA}$	—	$(-240)110$	$(-400)170$	mV
ベース・エミッタ飽和電圧	$V_{BE(sat)}$	$I_C = (-)2\text{ A}, I_B = (-)40\text{ mA}$		$(-)0.83$	$(-)1.2$	V
コレクタ・ベース降伏電圧	$V_{(BR)CBO}$	$I_C = (-)10\text{ }\mu\text{A}, I_E = 0\text{ A}$	$(-50)100$	—	—	V
コレクタ・エミッタ降伏電圧	$V_{(BR)CES}$	$I_C = (-)100\text{ }\mu\text{A}, R_{BE} = 0\text{ }\Omega$	$(-50)100$	—	—	V
	$V_{(BR)CEO}$	$I_C = (-)1\text{ mA}, R_{BE} = \infty$	$(-)50$	—	—	V
エミッタ・ベース降伏電圧	$V_{(BR)EBO}$	$I_E = (-)10\text{ }\mu\text{A}, I_C = 0\text{ A}$	$(-)6$	—	—	V
ターンオン時間	t_{on}	指定回路において	—	(40)30	—	ns
蓄積時間	t_{stg}		—	(225)420	—	ns
下降時間	t_f		—	25	—	ns

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

(参考図)

製品パラメータは、特別な記述が無い限り、記載されたテスト条件に対する電氣的特性で示しています。異なる条件下で製品動作を行った時には、電氣的特性で示している特性を得られない場合があります。

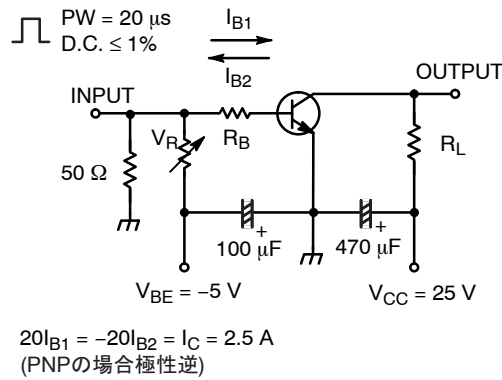


図 1. スイッチングタイム測定回路図

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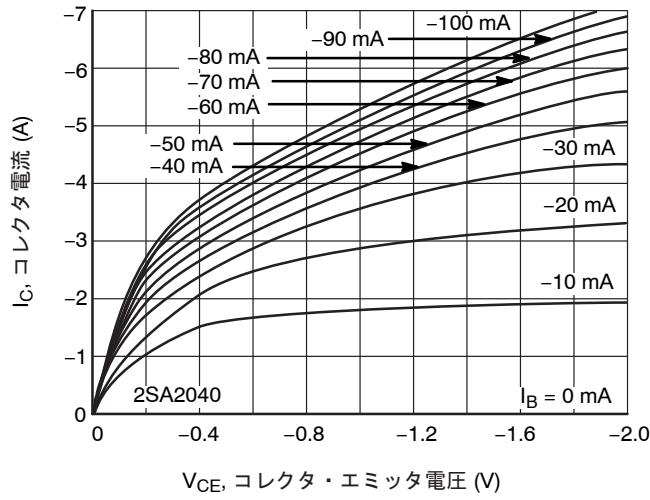


図 2. $I_C - V_{CE}$

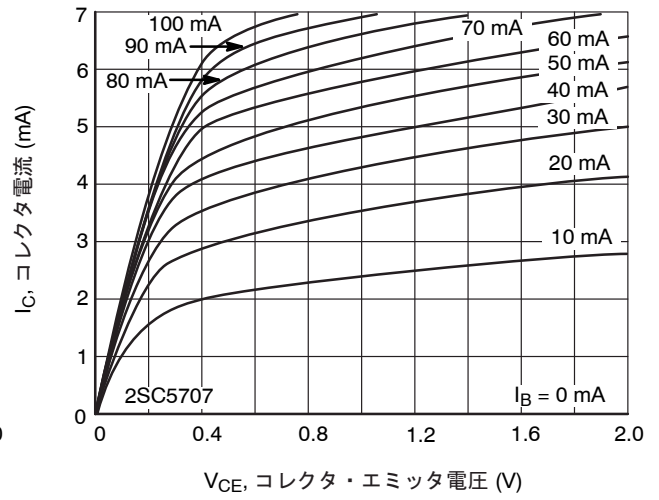


図 3. $I_C - V_{CE}$

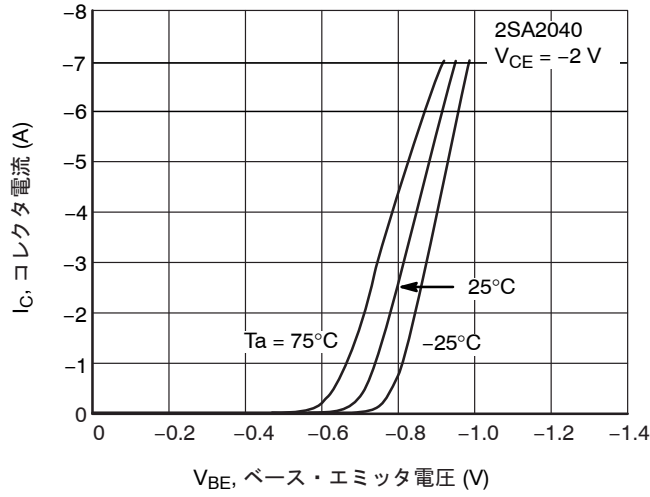


図 4. $I_C - V_{BE}$

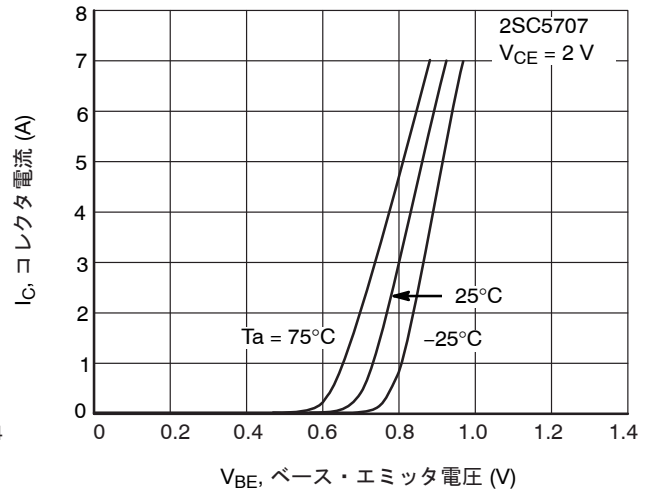


図 5. $I_C - V_{BE}$

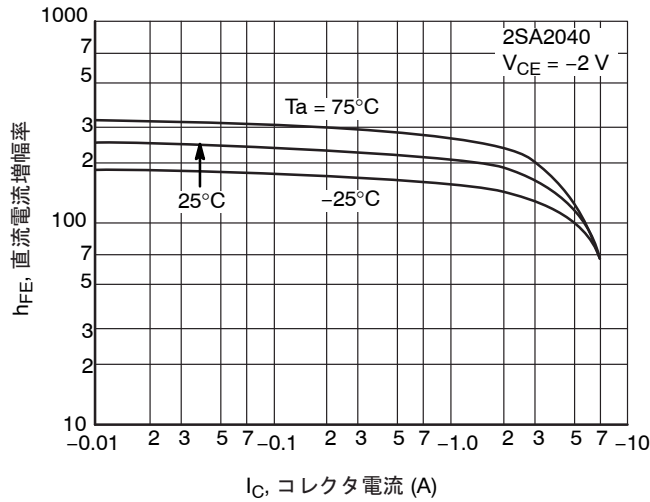


図 6. $h_{FE} - I_C$

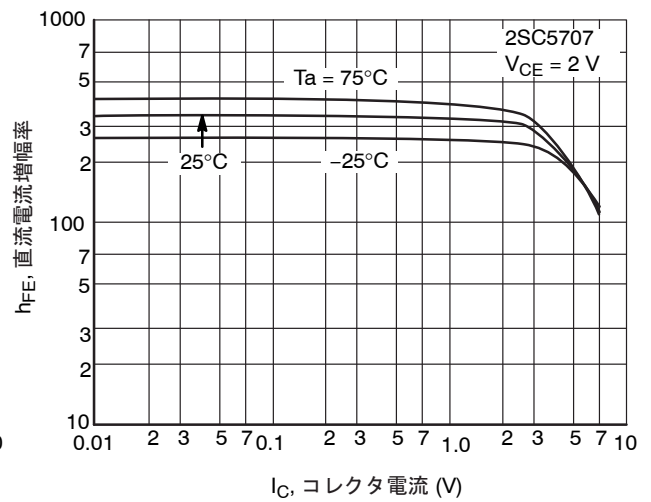


図 7. $h_{FE} - I_C$

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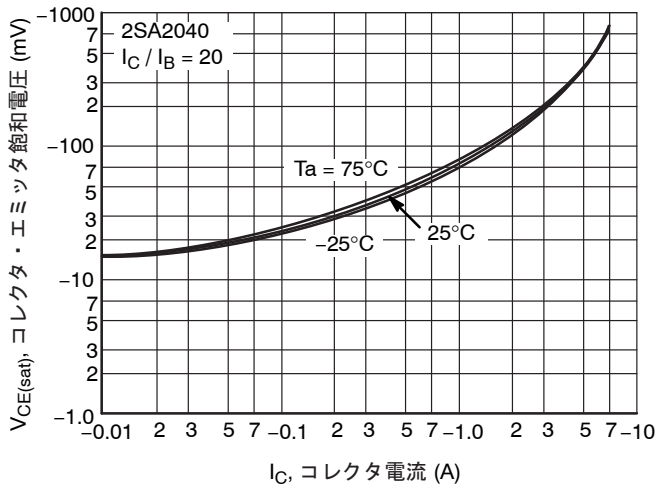


図 8. $V_{CE(sat)} - I_C$

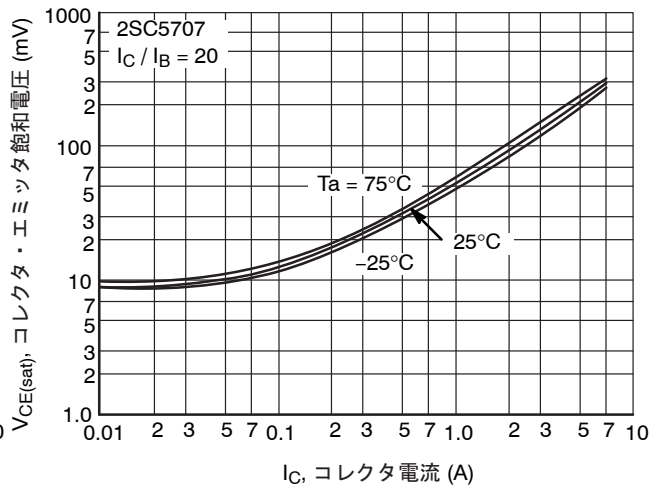


図 9. $V_{CE(sat)} - I_C$

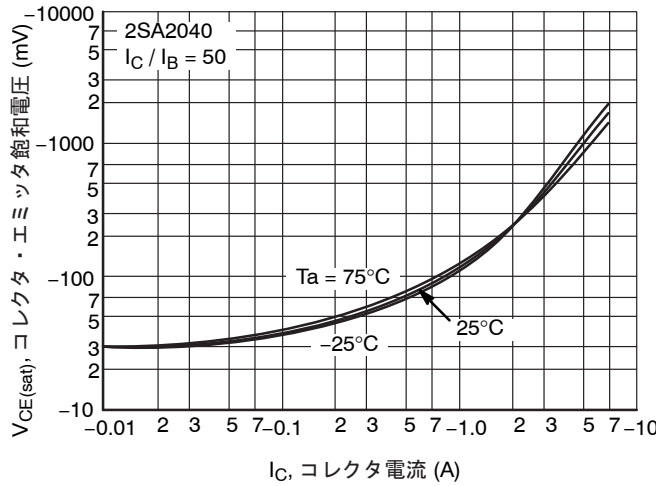


図 10. $V_{CE(sat)} - I_C$

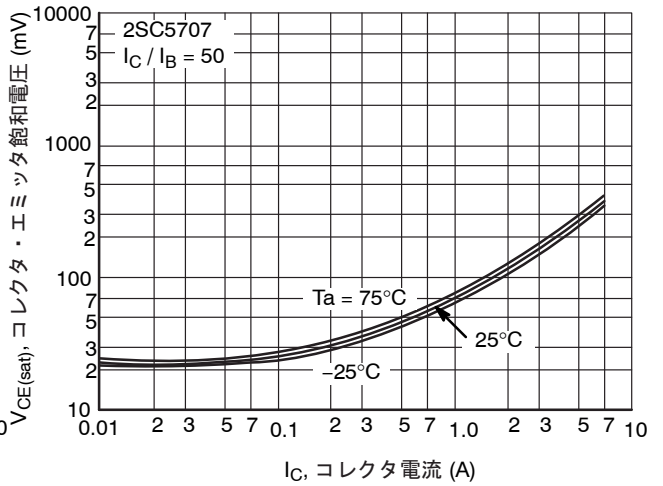


図 11. $V_{CE(sat)} - I_C$

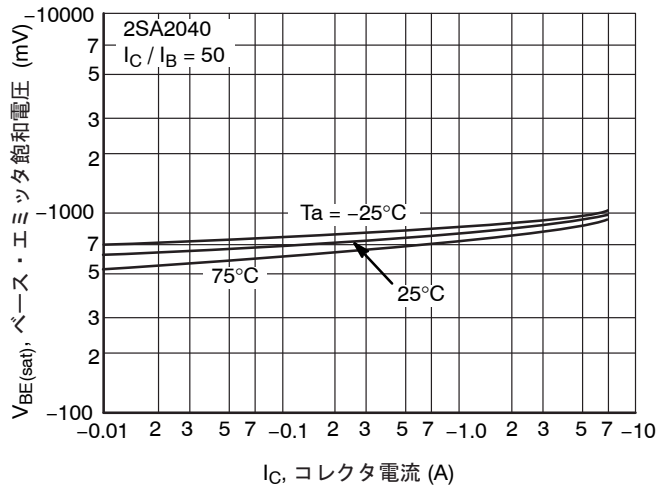


図 12. $V_{BE(sat)} - I_C$

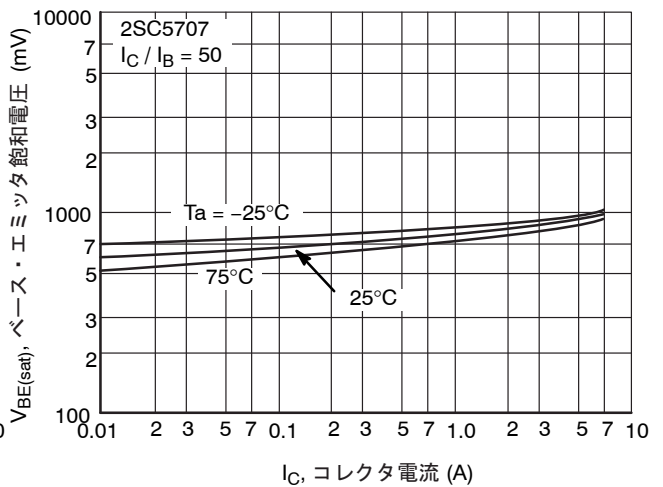


図 13. $V_{BE(sat)} - I_C$

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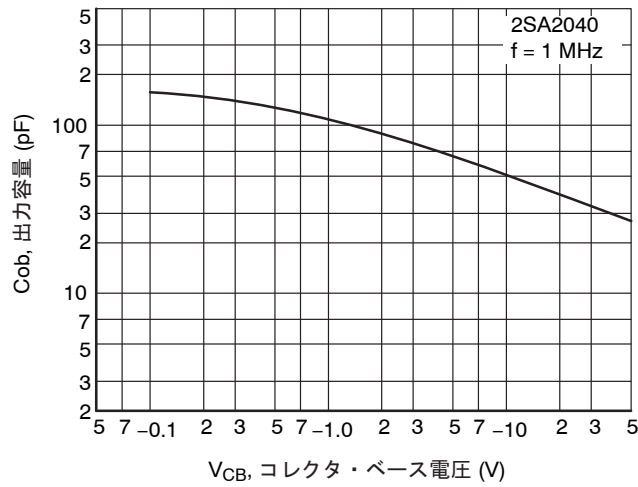


図 14. Cob - V_{CB}

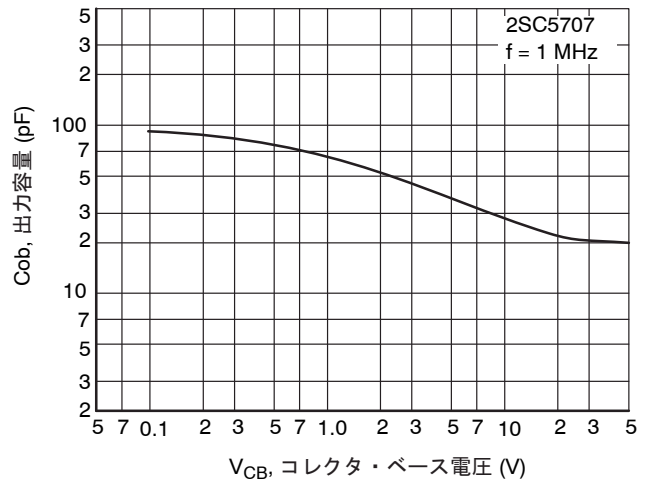


図 15. Cob - V_{CB}

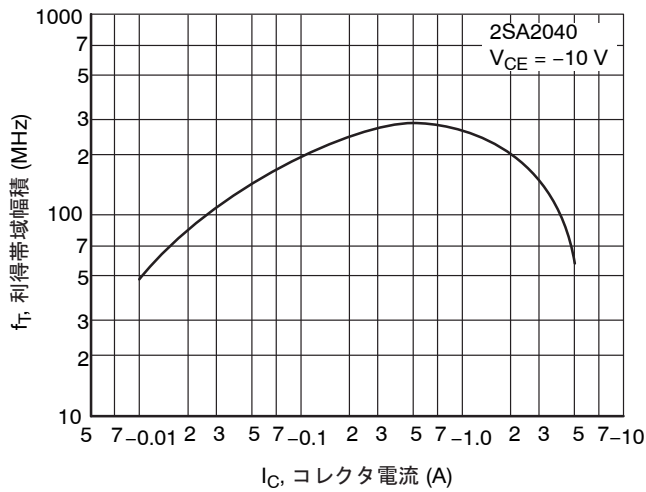


図 16. $f_T - I_C$

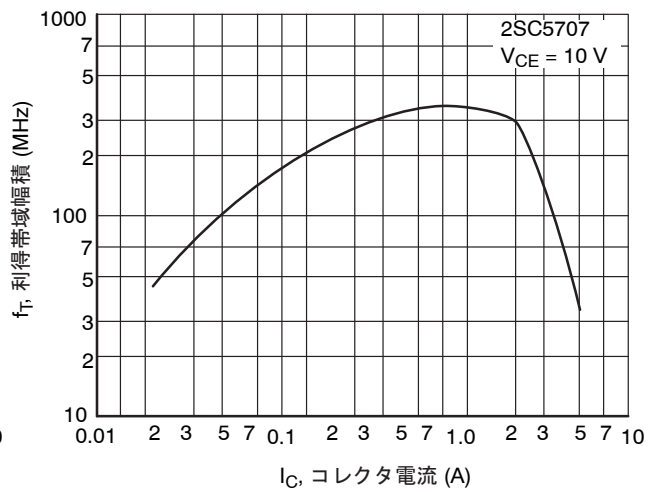


図 17. $f_T - I_C$

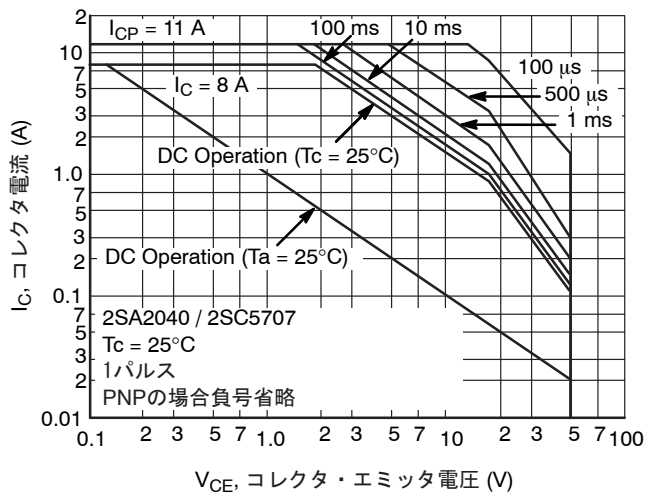


図 18. ASO

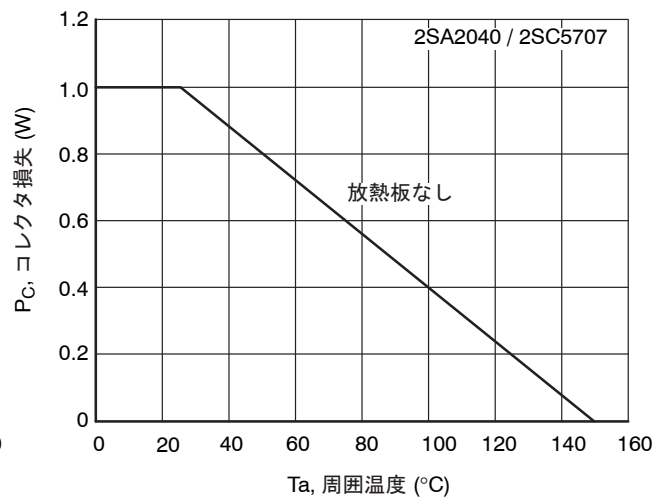


図 19. $P_C - T_a$

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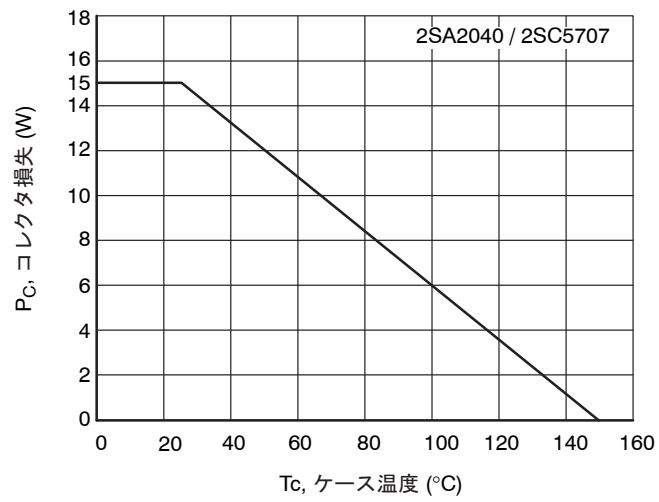
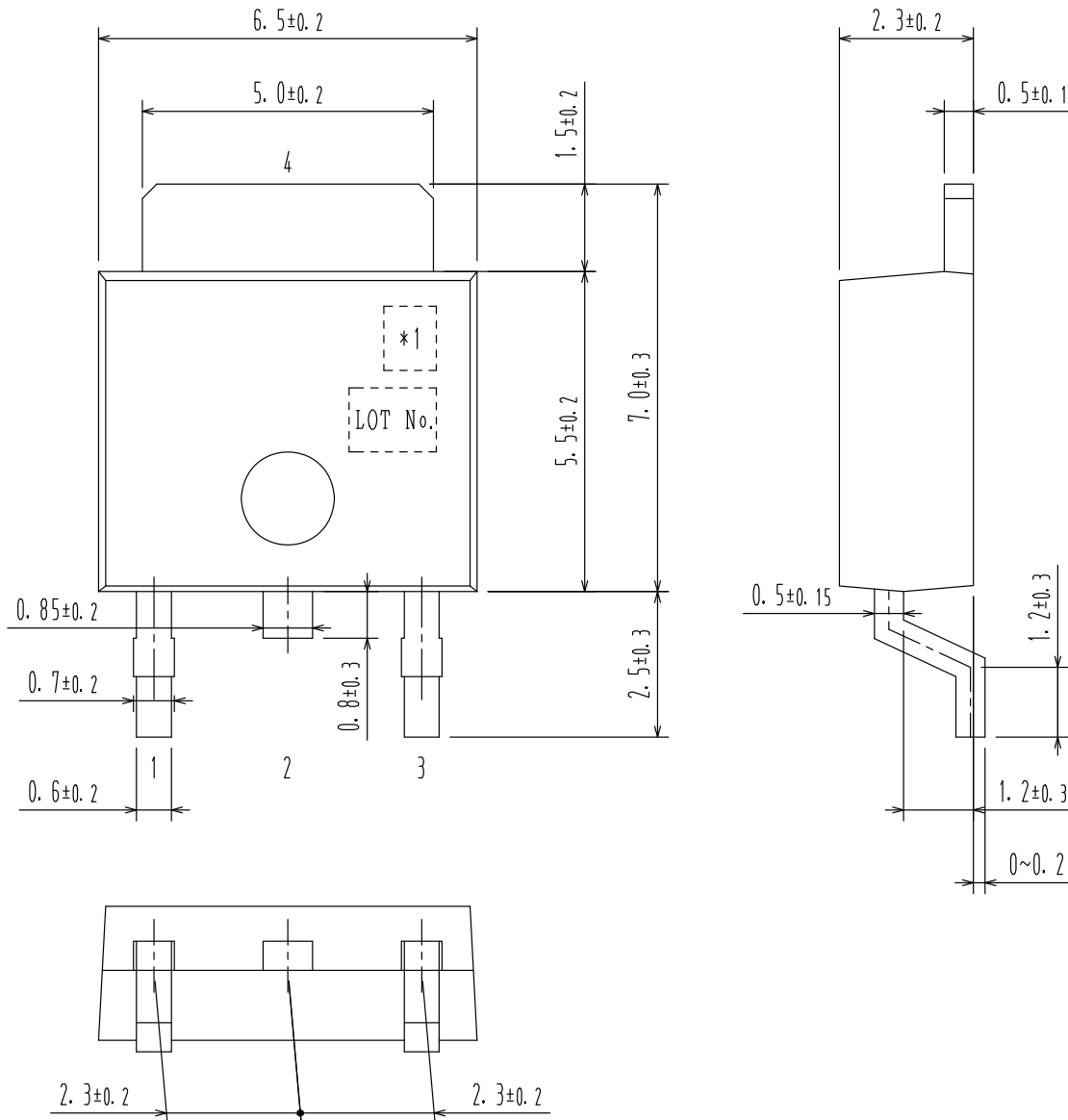


図 20. $P_C - T_C$

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ISSUE O

DATE 30 JAN 2012



Pin 2 is idle pin with electrical designation only carried.

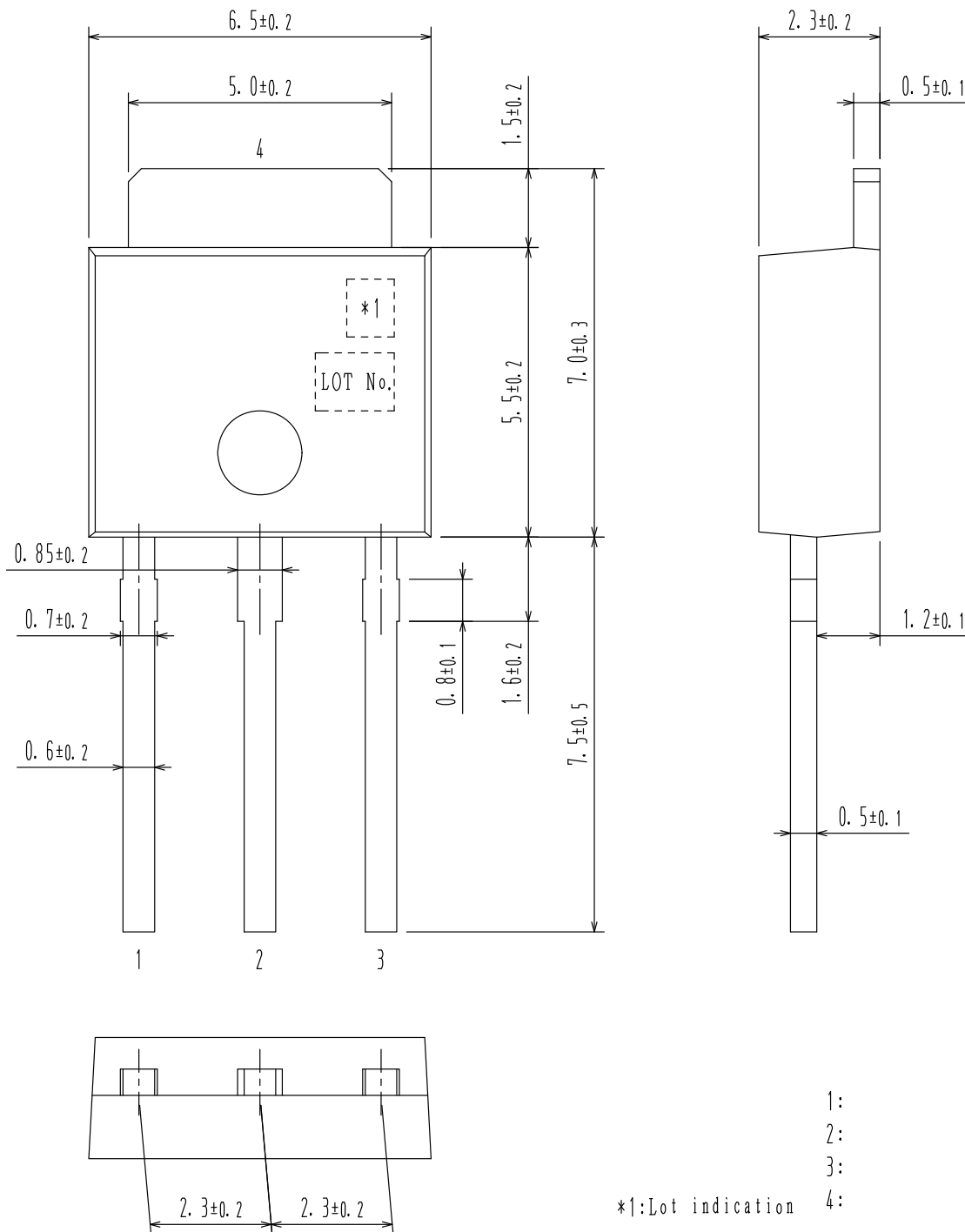
	1:
	2:
	3:
*1:Lot indication	4:

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1:
2:
3:
4:

*1: Lot indication

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