

SMA6080

PNP + NPN Darlington
3-phase motor drive

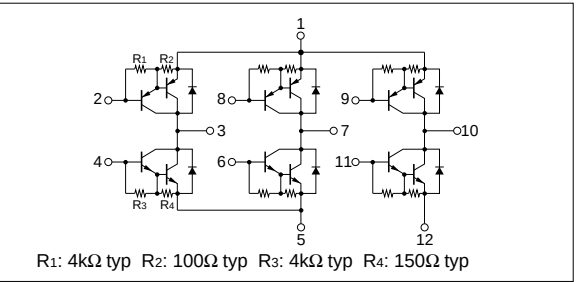
External dimensions  SMA

Absolute maximum ratings

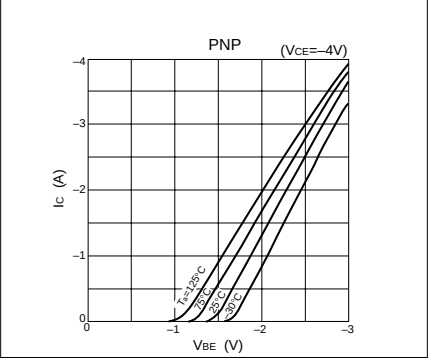
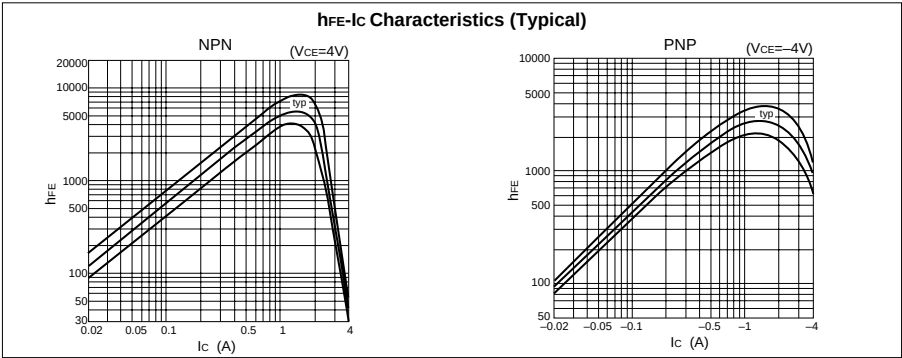
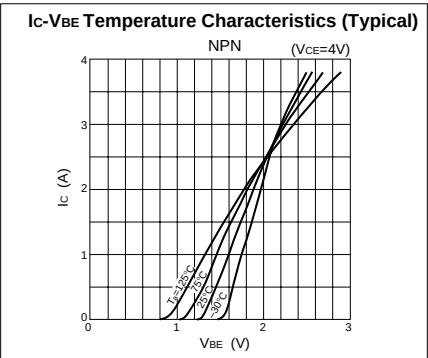
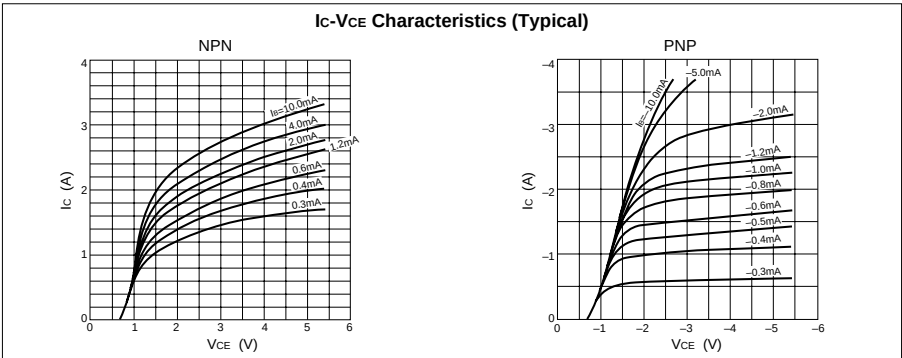
(Ta=25°C)

Symbol	Ratings		Unit
	NPN	PNP	
V _{CBO}	60	-60	V
V _{CEO}	60	-60	V
V _{EBO}	6	-6	V
I _C	2	-2	A
I _{CP}	4 (PW≤1ms, Du≤50%)	-4 (PW≤1ms, Du≤50%)	A
I _B	0.5	-0.5	A
P _T	4 (Ta=25°C) 20 (Tc=25°C)		W
T _j	150		°C
T _{stg}	-40 to +150		°C
θ _{j-c}	6.25		°C/W

Equivalent circuit diagram



Characteristic curves



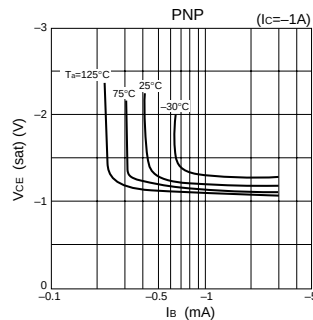
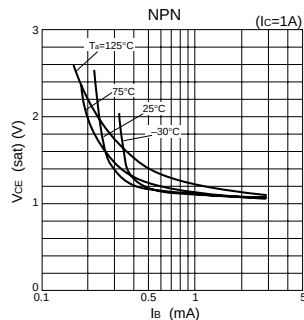
Electrical characteristics

($T_a=25^\circ\text{C}$)

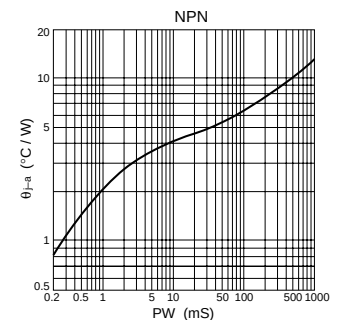
Symbol	NPN					PNP				
	Specification			Unit	Conditions	Specification			Unit	Conditions
	min	typ	max			min	typ	max		
I_{CBO}			10	μA	$V_{CB}=60\text{V}$			-10	μA	$V_{CB}=-60\text{V}$
I_{EBO}			5	mA	$V_{EB}=6\text{V}$			-5	mA	$V_{EB}=-6\text{V}$
V_{CEO}	60			V	$I_C=10\text{mA}$	-60			V	$I_C=-10\text{mA}$
h_{FE}	2000	5000	12000		$V_{CE}=4\text{V}$, $I_C=1\text{A}$	2000	5000	12000		$V_{CE}=-4\text{V}$, $I_C=-1\text{A}$
$V_{CE(sat)}$		1.1	1.5	V	$I_C=1\text{A}$, $I_B=2\text{mA}$		-1.2	-1.5	V	$I_C=-1\text{A}$, $I_B=-2\text{mA}$
$V_{BE(sat)}$		1.8	2.2	V			-1.9	-2.2	V	
V_{FEC}		1.3	1.8	V	$I_{FEC}=1\text{A}$		-1.3	-1.8	V	$I_{FEC}=-1\text{A}$
t_{on}		0.5		μs	$V_{CC}\div-30\text{V}$, $I_C=1\text{A}$, $I_{B1}=-I_{B2}=2\text{mA}$		0.4		μs	$V_{CC}\div-30\text{V}$, $I_C=-1\text{A}$, $I_{B1}=-I_{B2}=-2\text{mA}$
t_{stg}		4.5		μs			1.0		μs	
t_r		1.2		μs			0.4		μs	
f_T		50		MHz	$V_{CE}=12\text{V}$, $I_E=-0.1\text{A}$		100		MHz	$V_{CE}=-12\text{V}$, $I_E=0.1\text{A}$
C_{ob}		20		pF	$V_{CB}=10\text{V}$, $f=1\text{MHz}$		30		pF	$V_{CB}=-10\text{V}$, $f=1\text{MHz}$

Characteristic curves

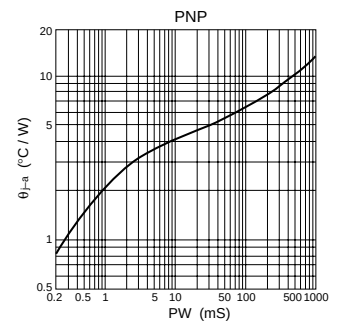
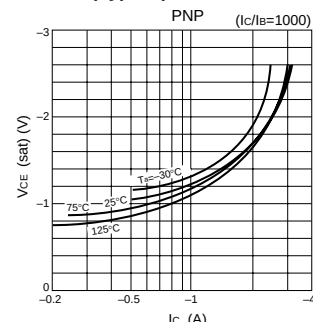
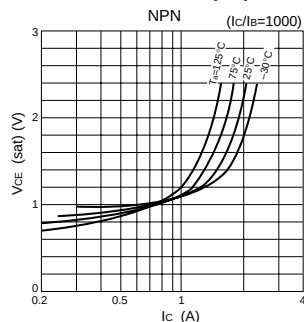
$V_{CE(sat)}$ - I_B Characteristics (Typical)



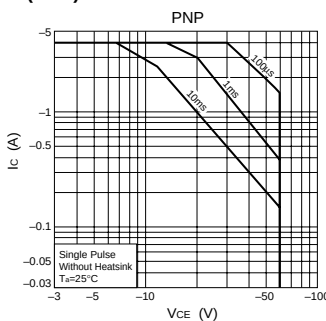
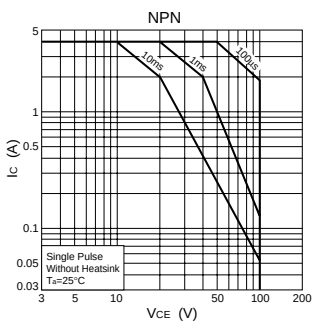
θ_{JA} -PW Characteristics



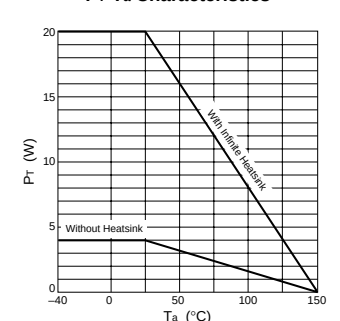
$V_{CE(sat)}$ - I_C Temperature Characteristics (Typical)



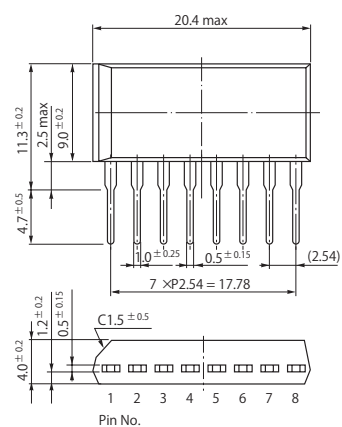
Safe Operating Area (SOA)



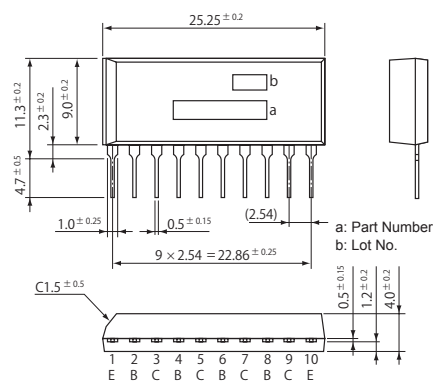
P_T - T_a Characteristics



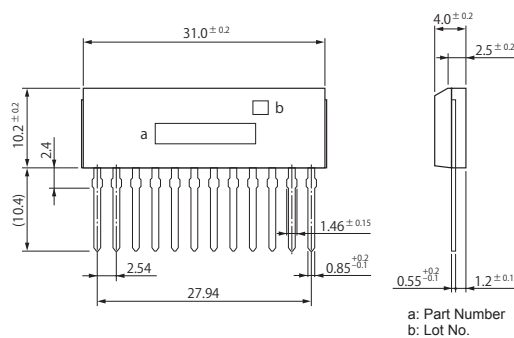
• SIP 8 (STA8Pin)



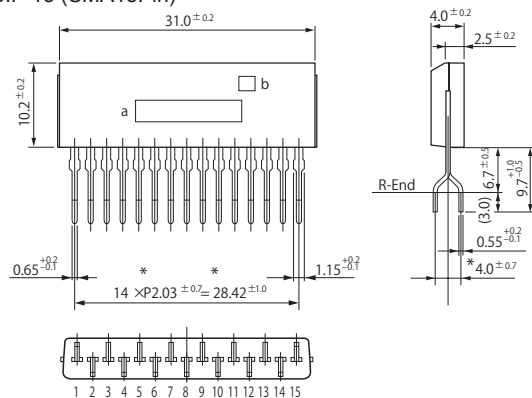
• SIP 10 (STA10Pin)



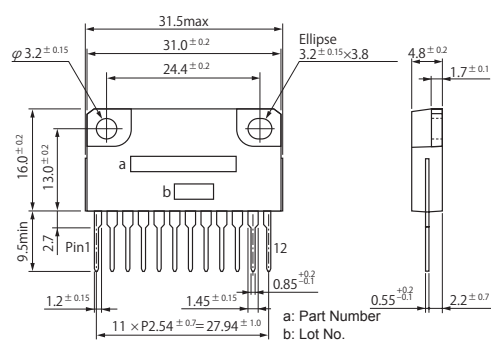
• SIP 12 (SMA12Pin)



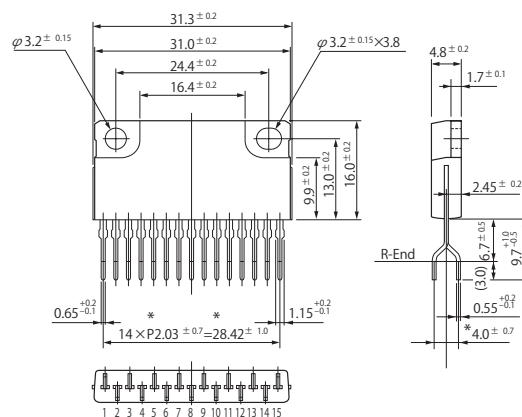
• SIP 15 (SMA15Pin)



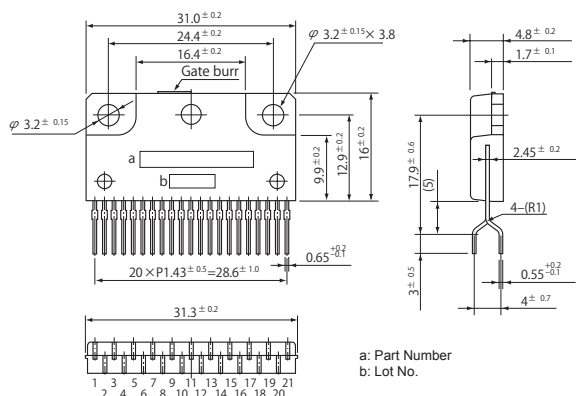
• SIP 12 with Fin (SLA12Pin)



• SIP 15 with Fin (SLA15Pin)



• SIP 21 with Fin (SLA21Pin)



(Unit:mm)