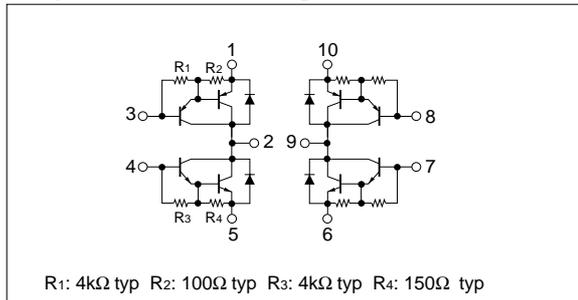# STA474A

PNP + NPN Darlington
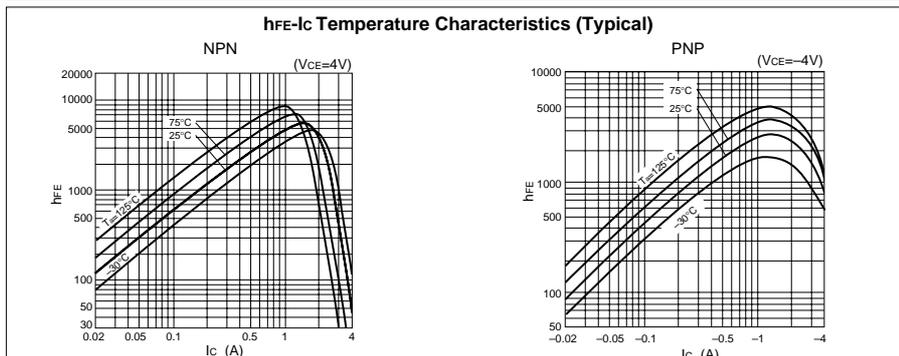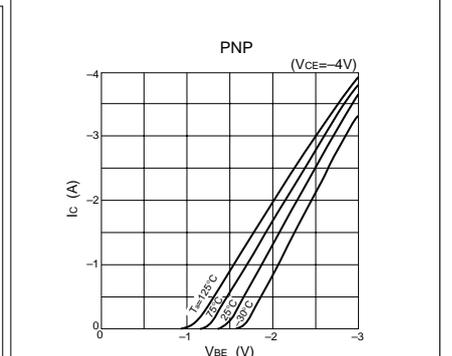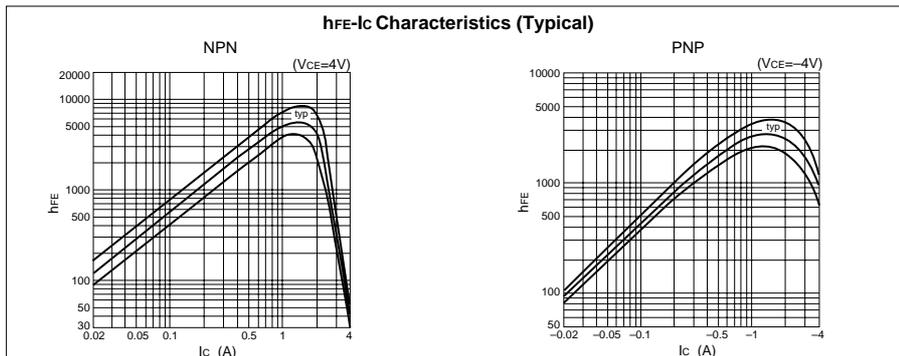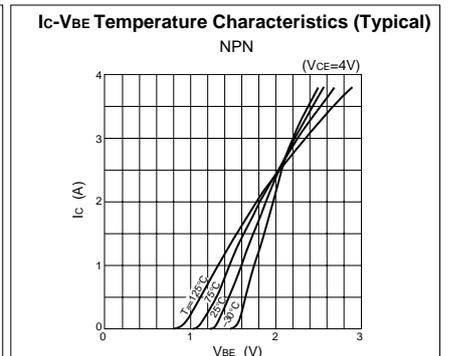**H-bridge**

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≤25%)	−4 (PW≤1ms, Du≤25%)	A
I_B	0.5	−0.5	A
P_T	4 (Ta=25°C)		W
	20 (Tc=25°C)		
T_j	150		°C
T_{stg}	−40 to +150		°C
θ_{j-c}	6.25		°C/W

■Equivalent circuit diagram

R₁: 4kΩ typ R₂: 100Ω typ R₃: 4kΩ typ R₄: 150Ω typ

━ Characteristic curves ━

Ic-Vce Characteristics (Typical)

Ic-Vbe Temperature Characteristics (Typical)

hFE-Ic Characteristics (Typical)

hFE-Ic Temperature Characteristics (Typical)
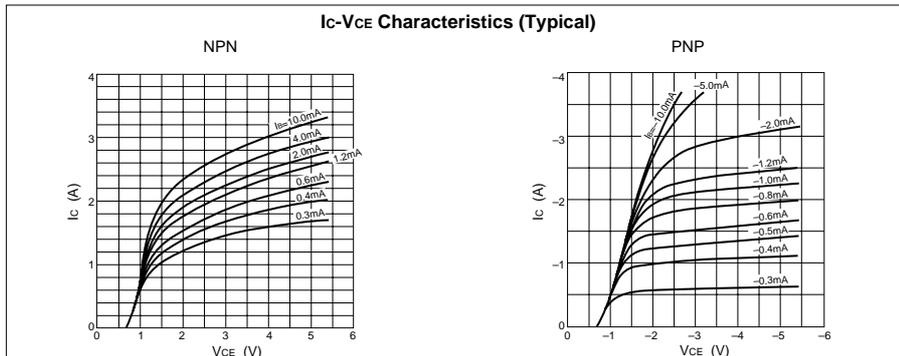
Electrical characteristics

(Ta=25°C)

Symbol	NPN					PNP				
	Specification			Unit	Conditions	Specification			Unit	Conditions
	min	typ	max			min	typ	max		
I_{CBO}			10	μA	V_{CB}=60V			−10	μA	V_{CB}=−60V
I_{EBO}			5	mA	V_{EB}=6V			−5	mA	V_{EB}=−6V
V_{CEO}	60			V	I_C=10mA	−60			V	I_C=−10mA
h_{FE}	2000	5000	12000		V_{CE}=4V, I_C=1A	2000	4000	10000		V_{CE}=−4V, I_C=−1A
V_{CE}(sat)		1.1	1.5	V	I_C=1A, I_B=2mA		−1.2	−1.5	V	I_C=−1A, I_B=−2mA
V_{BE}(sat)		1.8	2.2	V			−1.9	−2.2	V	
t_{on}		0.5		μs	V_{CC}≒30V,		0.4		μs	V_{CC}≒−30V,
t_{stg}		4.5		μs	I_C=1A,		1.0		μs	I_C=−1A,
t_f		1.2		μs	I_B=±2mA		0.4		μs	I_B=±2mA
f_T		50		MHz	V_{CE}=12V, I_E=−0.1A		100		MHz	V_{CE}=−12V, I_E=0.1A
C_{ob}		20		pF	V_{CE}=10V, f=1MHz		30		pF	V_{CE}=−10V, f=1MHz
V_{FEC}		1.3	1.8	V	I_{FEC}=1A		−1.3	−1.8	V	I_{FEC}=−1A

■ Characteristic curves ■

VCE(sat)-IB Characteristics (Typical)

θj-a-PW Characteristics

VCE(sat)-IC Characteristics (Typical)

PT-Ta Characteristics

Safe Operating Area (SOA)