SMA4033

NPN Darlington
With built-in flywheel diode

External dimensions Ⓑ···SMA

Absolute maximum ratings

(Ta=25°C)

Symbol	Ratings	Unit
V_{CBO}	120	V
V_{CEO}	100	V
V_{EBO}	6	V
I_C	2	A
I_{CP}	4 (PW≤1ms, Du≤50%)	A
I_B	0.2	A
I_F	2 (PW≤0.5ms, Du≤25%)	A
I_{FSM}	4 (PW≤10ms, Single pulse)	A
V_R	120	V
P_T	4 (Ta=25°C)	W
	20 (Tc=25°C)	
Tj	150	°C
Tstg	–40 to +150	°C

Electrical characteristics

(Ta=25°C)

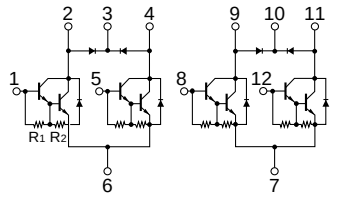
Symbol	Specification min	typ	max	Unit	Conditions
I_{CBO}			10	μA	V_{CB}=120V
I_{EBO}			10	mA	V_{EB}=6V
V_{CEO}	100			V	I_C=25mA
h_{FE}	2000	6000	15000		V_{CE}=4V, I_C=1A
V_{CE}(sat)		1.1	1.5	V	I_C=1A, I_B=2mA
V_{BE}(sat)		1.7	2.0	V	

●Diode for flyback voltage absorption

(Ta=25°C)

Symbol	Specification min	typ	max	Unit	Conditions
V_R	120			V	I_R=10μA
V_F			1.8	V	I_F=1A
I_R			10	μA	V_R=120V
trr		100		ns	I_F=±100mA

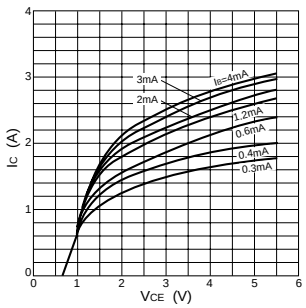
■Equivalent circuit diagram



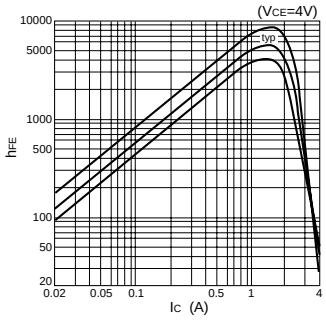
R1: 4kΩ typ R2: 150Ω typ

Characteristic curves

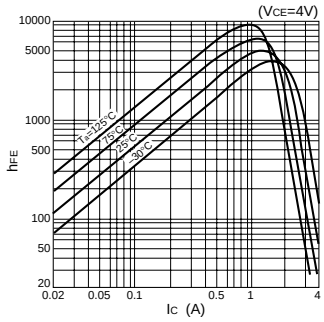
I_C-V_{CE} Characteristics (Typical)



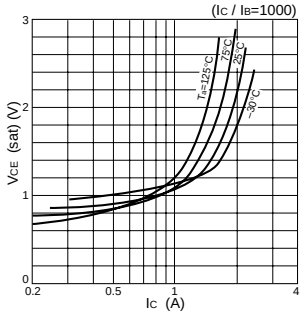
h_{FE}-I_C Characteristics (Typical)



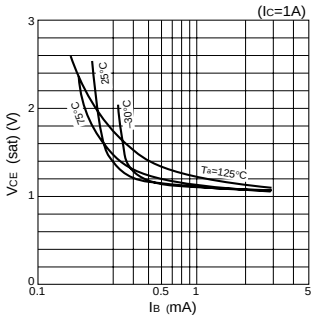
h_{FE}-I_C Temperature Characteristics (Typical)



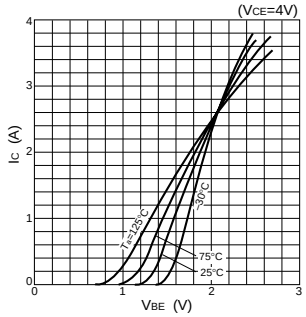
V_{CE}(sat)-I_C Temperature Characteristics (Typical)



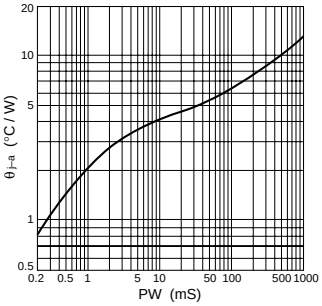
V_{CE}(sat)-I_B Characteristics (Typical)



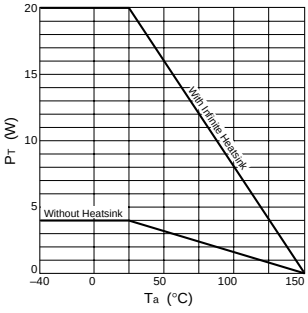
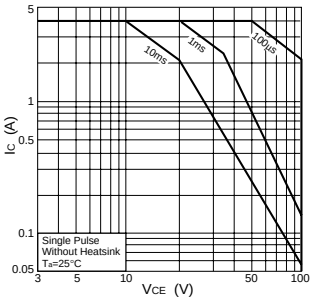
I_C-V_{BE} Temperature Characteristics (Typical)



$\theta_{j\text{-}a}$-PW Characteristics



P_T-T_a Characteristics



Safe Operating Area (SOA)