SLA4031

NPN Darlington
With built-in flywheel diode

External dimensions Ⓐ ··· SLA

Absolute maximum ratings (Ta=25°C)

Symbol	Specification	Unit
V_{CBO}	120	V
V_{CEO}	120	V
V_{EBO}	6	V
I_C	4	A
I_{CP}	6 (PW≤1ms, Du≤50%)	A
I_B	0.5	A
I_F	4 (PW≤0.5ms, Du≤25%)	A
I_{FSM}	6 (PW≤10ms, Single)	A
V_R	120	V
P_T	5 (Ta=25°C)	W
	25 (Tc=25°C)	
V_{ISO}	1000 (Between fin and lead pin, AC)	Vrms
T_j	150	°C
T_{stg}	–40 to +150	°C
$\theta_{j\text{-}c}$	5	°C/W

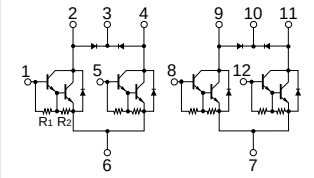
Electrical characteristics (Ta=25°C)

Symbol	Specification min	typ	max	Unit	Conditions
I_{CBO}			10	μA	V_{CB}=120V
I_{EBO}			10	mA	V_{EB}=6V
V_{CEO}	120			V	I_C=25mA
h_{FE}	2000	5000	15000		V_{CE}=2V, I_C=2A
V_{CE} (sat)		1.0	1.5	V	I_C=2A, I_B=2mA
V_{BE} (sat)		1.6	2.0	V	
ton		0.6		μs	V_{CC}≒40V,
tstg		5.0		μs	I_C=2A,
tf		2.0		μs	I_{B1}=–I_{B2}=10mA

■Diode for flyback voltage absorption (Ta=25°C)

Symbol	Specification min	typ	max	Unit	Conditions
V_R	120			V	I_R=10μA
V_F			1.2	V	I_F=1A
I_R			10	μA	V_R=120V
trr		100		ns	I_F=±100mA

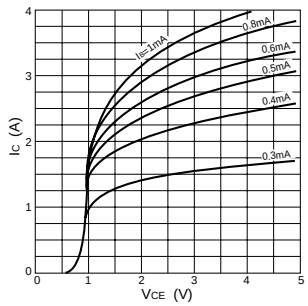
■Equivalent circuit diagram



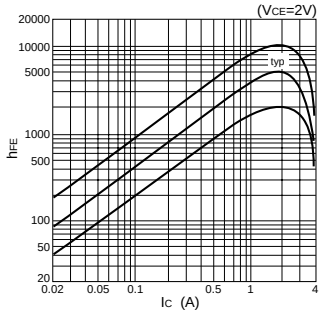
R1: 3kΩ typ R2: 500Ω typ

Characteristic curves

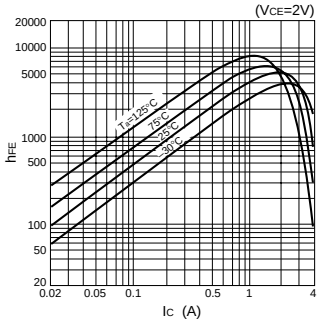
IC-VCE Characteristics (Typical)



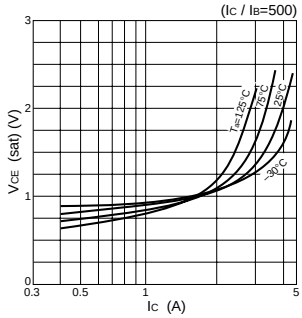
hFE-IC Characteristics (Typical)



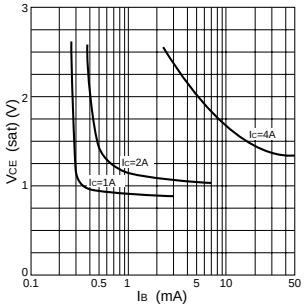
hFE-IC Temperature Characteristics (Typical)



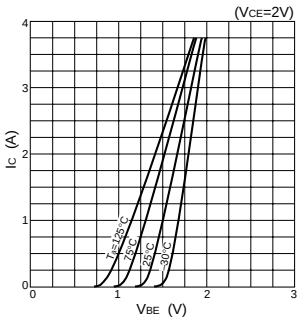
VCE(sat)-IC Temperature Characteristics (Typical)



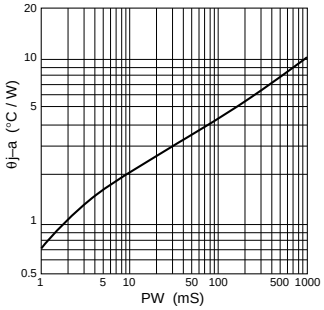
VCE(sat)-IB Characteristics (Typical)



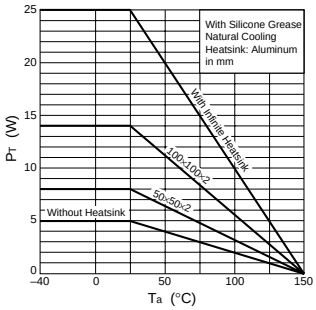
IC-VBE Temperature Characteristics (Typical)



θj-a-PW Characteristics



PT-Ta Characteristics



Safe Operating Area (SOA)