

# 2SD2422

# Transistor, NPN, Darlington

### Features

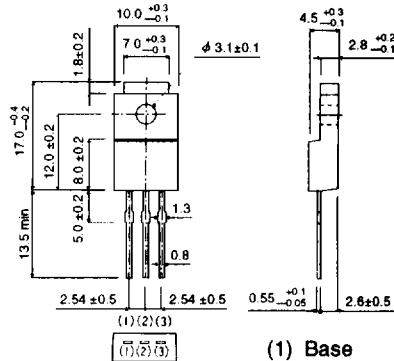
- available in TO-220FP (SC-67) package
- Darlington connection provides high dc current gain ( $h_{FE}$ )
- damper diode is incorporated
- built-in resistors between base and emitter
- wide safe operating area (SOA)
- resistant to breakdown

### Applications

- lamp driver, solenoid driver

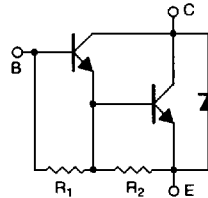
### Dimensions (Units : mm)

2SD2422 (TO-220FP)



- (1) Base
- (2) Collector
- (3) Emitter

### Equivalent circuit



- $R_1 \cong 5 \text{ k}\Omega$
- $R_2 \cong 300 \Omega$

- B: Base
- C: Collector
- E: Emitter

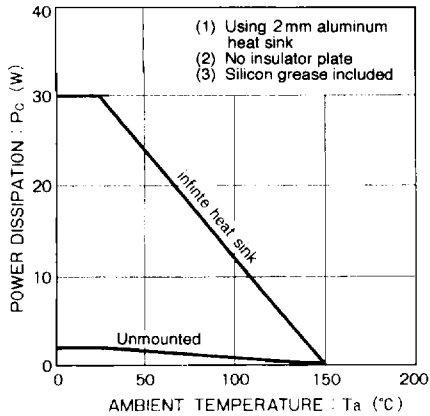
### Absolute maximum ratings ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Limits	Unit	Conditions
Collector-to-base voltage	$V_{CBO}$	100	V	
Collector-to-emitter voltage	$V_{CEO}$	100	V	
Emitter-to-base voltage	$V_{EBO}$	7	V	
Collector current	$I_C$	7	A	Continuous (dc)
		10	A	Single pulse, $P_W = 100 \text{ ms}$
Collector dissipation	$P_C$	2	W	
		30	W	$T_C = 25^\circ\text{C}$
Junction temperature	$T_j$	150	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	-55 ~ +150	$^\circ\text{C}$	

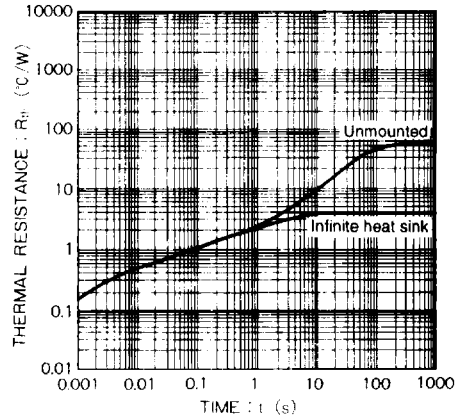
**Electrical characteristics (unless otherwise noted,  $T_a = 25\text{ C}$ )**

Parameter	Symbol	Min	Typical	Max	Unit	Conditions
Collector-to-base breakdown voltage	$BV_{CBO}$	100			V	$I_C = 50\ \mu\text{A}$
Collector-to-emitter breakdown voltage	$BV_{CEO}$	100			V	$I_C = 5\ \text{mA}$
Collector cutoff current	$I_{CBO}$			10	$\mu\text{A}$	$V_{CB} = 100\ \text{V}$
Emitter cutoff current	$I_{EBO}$			3	mA	$V_{EB} = 5\ \text{V}$
DC current gain	$h_{FE}$	1 k		20 k		$V_{CE} = 3\ \text{V}$ , $I_C = 2\ \text{A}$ , single pulse
Collector-to-emitter saturation voltage	$V_{CE(sat)}$			1.5	V	$I_C/I_B = 3\ \text{A}/6\ \text{mA}$ , single pulse
Transition frequency	$f_T$		40		MHz	$V_{CE} = 5\ \text{V}$ , $I_E = -0.2\ \text{A}$ , $f = 10\ \text{MHz}$ , characteristics of built-in transistors
Output capacitance	$C_{ob}$		85		pF	$V_{CB} = 10\ \text{V}$ , $I_E = 0\ \text{A}$ , $f = 1\ \text{MHz}$

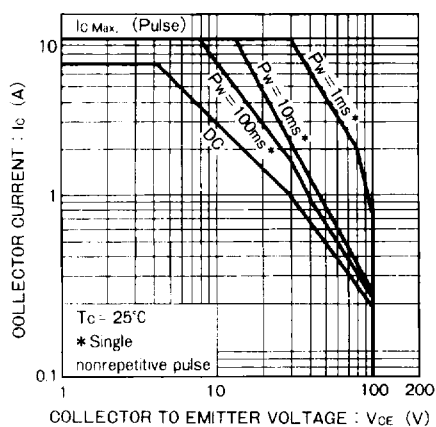
**Electrical characteristic curves**



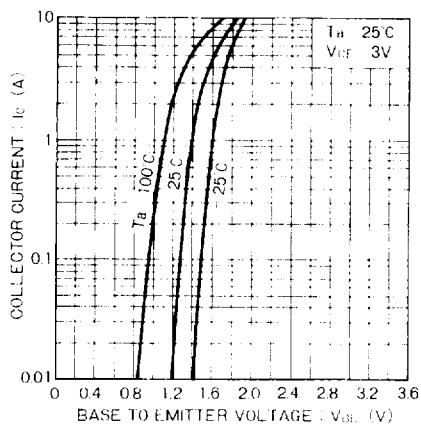
**Figure 1**



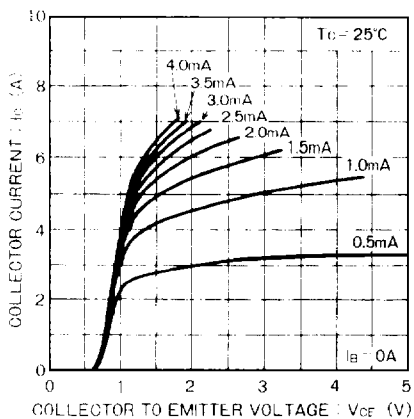
**Figure 2**



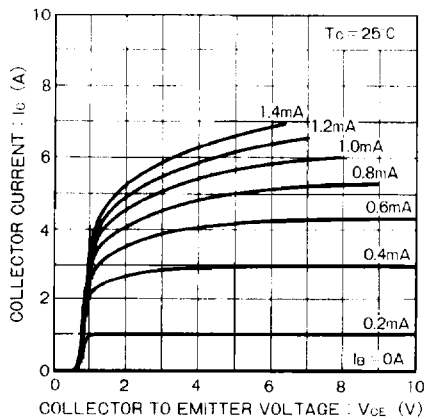
**Figure 3**



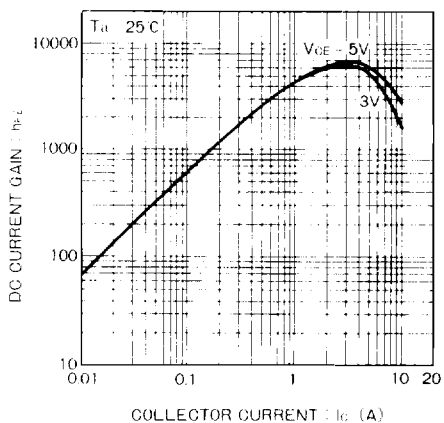
**Figure 4**



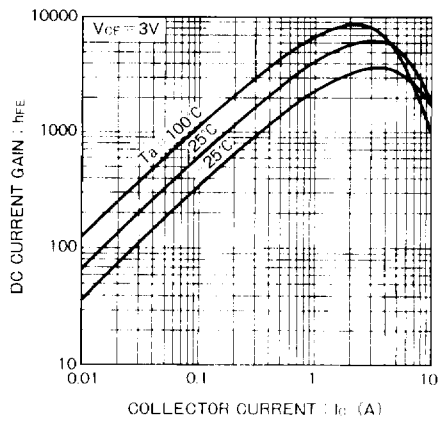
**Figure 5**



**Figure 6**



**Figure 7**



**Figure 8**

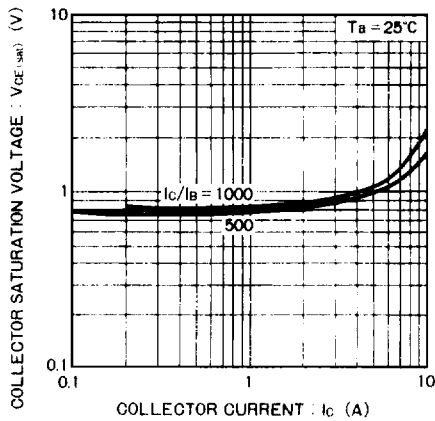


Figure 9

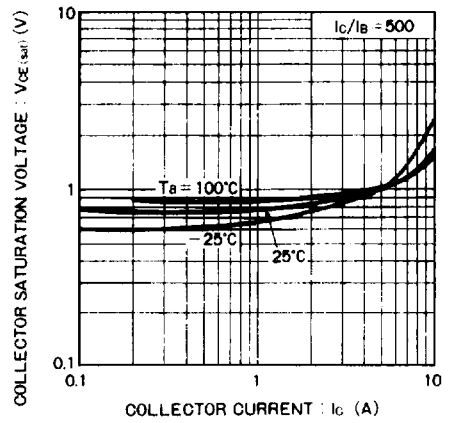


Figure 10

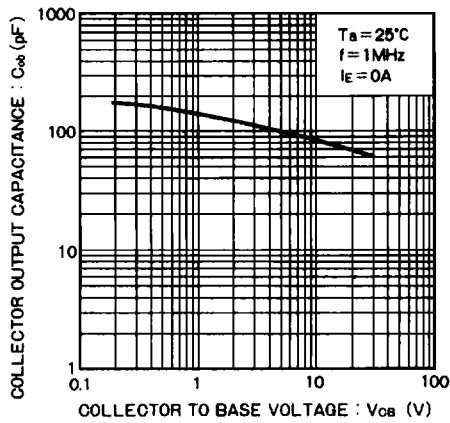


Figure 11

Ordering information

Package	Bulk
Code	
Basic order quantity	500
2SD2422	★
★ = Standard, ☆ = Semi-standard, * = Special order	