

## MMST3904 TRANSISTOR (NPN)

### FEATURES

Power dissipation

$$P_{CM}: 0.2 \text{ W (Tamb=25}^\circ\text{C)}$$

Collector current BASE

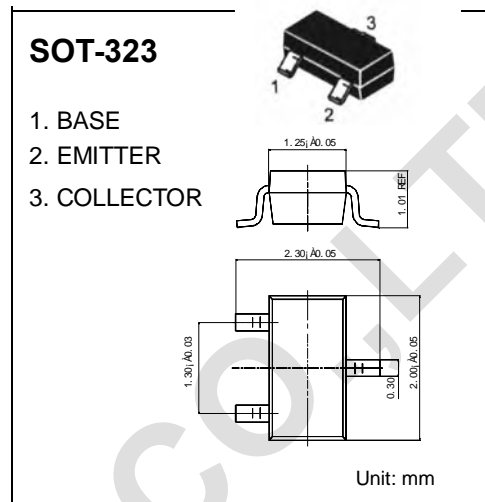
$$I_{CM}: 0.2 \text{ A}$$

Collector-base voltage

$$V_{(BR)CBO}: 60 \text{ V}$$

Operating and storage junction temperature range

$$T_J, T_{stg}: -55^\circ\text{C to } +150^\circ\text{C}$$



### ELECTRICAL CHARACTERISTICS (Tamb=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = 10\mu\text{A}, I_E = 0$	60		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 1 \text{ mA}, I_B = 0$	40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = 10\mu\text{A}, I_C = 0$	5		V
Collector cut-off current	$I_{CBO}$	$V_{CB} = 60\text{V}, I_E = 0$		0.1	$\mu\text{A}$
Collector cut-off current	$I_{CEO}$	$V_{CE} = 40\text{V}, I_B = 0$		0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 5\text{V}, I_C = 0$		0.1	$\mu\text{A}$
DC current gain	$h_{FE(1)}$	$V_{CE} = 1\text{V}, I_C = 10\text{mA}$	100	300	
	$h_{FE(2)}$	$V_{CE} = 1\text{V}, I_C = 50\text{mA}$	60		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 50 \text{ mA}, I_B = 5\text{mA}$		0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = 50 \text{ mA}, I_B = 5\text{mA}$		0.95	V
Transition frequency	$f_T$	$V_{CE} = 20\text{V}, I_C = 10\text{mA}$ $f = 100\text{MHz}$	250		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = 5\text{V}, I_E = 0$ $f = 1\text{MHz}$		4	pF
Delay time	$t_d$	$V_{CC} = 3\text{V}, V_{BE} = 0.5\text{V}$		35	nS
Rise time	$t_r$	$I_C = 10\text{mA}, I_{B1} = 1\text{mA}$		35	nS
Storage time	$t_s$	$V_{CC} = 3\text{V}, I_C = 10\text{mA}$		200	nS
Fall time	$t_f$	$I_{B1} = I_{B2} = 1\text{mA}$		50	nS

Marking	K2N
---------	-----