

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE (PCT PROCESS)

# 2SC3138

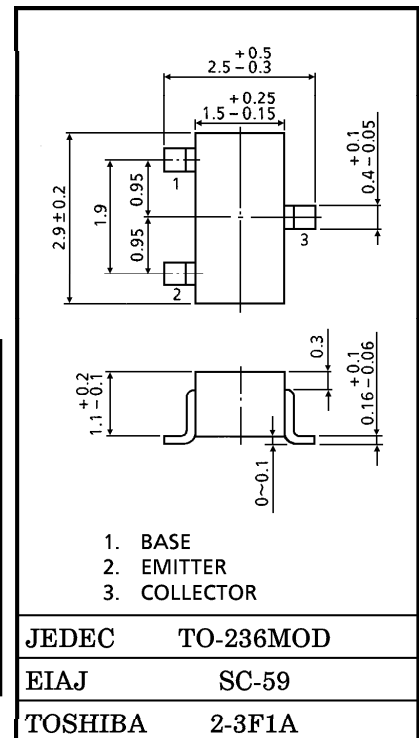
HIGH VOLTAGE SWITCHING APPLICATIONS

- High Voltage :  $V_{CBO}=200V$  (Min.)  
 $V_{CEO}=200V$  (Min.)
- Small Flat Package
- Complementary to 2SA1255

MAXIMUM RATINGS ( $T_a = 25^\circ C$ )

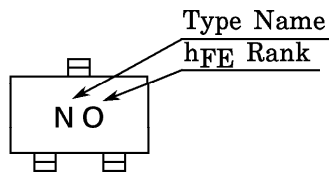
CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	$V_{CBO}$	200	V
Collector-Emitter Voltage	$V_{CEO}$	200	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Collector Current	$I_C$	50	mA
Base Current	$I_B$	20	mA
Collector Power Dissipation	$P_C$	150	mW
Junction Temperature	$T_j$	125	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55~125	$^\circ C$

Unit in mm



Weight : 0.012g

MARKING



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## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 200V, I_E = 0$	—	—	0.1	$\mu A$
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = 5V, I_C = 0$	—	—	0.1	$\mu A$
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 0.1mA, I_E = 0$	200	—	—	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1mA, I_B = 0$	200	—	—	V
DC Current Gain	$h_{FE}$ (Note)	$V_{CE} = 3V, I_C = 10mA$	70	—	240	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10mA, I_B = 1mA$	—	0.1	0.5	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10mA, I_B = 1mA$	—	0.75	1.5	V
Transition Frequency	$f_T$	$V_{CE} = 10V, I_C = 2mA$	50	100	—	MHz
Collector Output Capacitance	$C_{ob}$	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	2	4	pF
Switching Time	Turn on Time	$V_{CC} = 50V, I_C = 6mA,$ $I_{B1} = -I_{B2} = 0.6mA,$ Pulse Width = $5\mu s,$ Duty Cycle $\leq 2\%$	—	0.3	—	$\mu s$
	Storage Time		—	2	—	
	Fall Time		—	0.4	—	

(Note) :  $h_{FE}$  Classification    O : 70~140,    Y : 120~240

