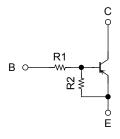
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process) (Bias Resistor built-in Transistor)

RN2961FS,RN2962FS,RN2963FS RN2964FS,RN2965FS,RN2966FS

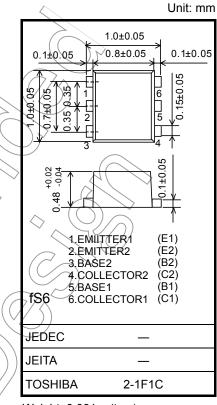
Switching, Inverter Circuit, Interface Circuit and Driver Circuit Applications

- Two devices are incorporated into a fine pitch Small Mold (6 pin) package.
- Incorporating a bias resistor into a transistor reduces parts count.
 Reducing the parts count enable the manufacture of ever more compact equipment and save assembly cost.
- Complementary to RN1961FS~RN1966FS

Equivalent Circuit and Bias Resistor Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN2961FS	4.7	4.7
RN2962FS	10	10
RN2963FS	22	22
RN2964FS	47	47//
RN2965FS	2.2	47
RN2966FS	4.7	47

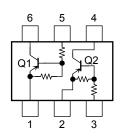


Weight: 0.001 g (typ.)

Absolute Maximum/Ratings (Ta = 25°C) (Q1, Q2 common)

Characteristics		Symbol	Rating	Unit	
Collector-base voltage	RN2961FS~2966FS	V _{CBO}	-20	V	
Collector-emitter voltage	141429011 3 - 29001 3	V _{CEO}	-20	V	
Emitter-base voltage	RN2961FS~2964FS	V _{EBO}	-10	V	
	RN2965FS, 2966FS	VEBO.	-5		
Collector current	\Diamond	IC	-50	mA	
Collector power dissipation	RN2961FS~2966FS	P _C (Note 1)	50	mW	
Junction temperature	14129011 3=2900F3	Tj	150	°C	
Storage temperature range	\rightarrow	T _{stg}	−55~150	°C	

Equivalent Circuit (top view)



Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings

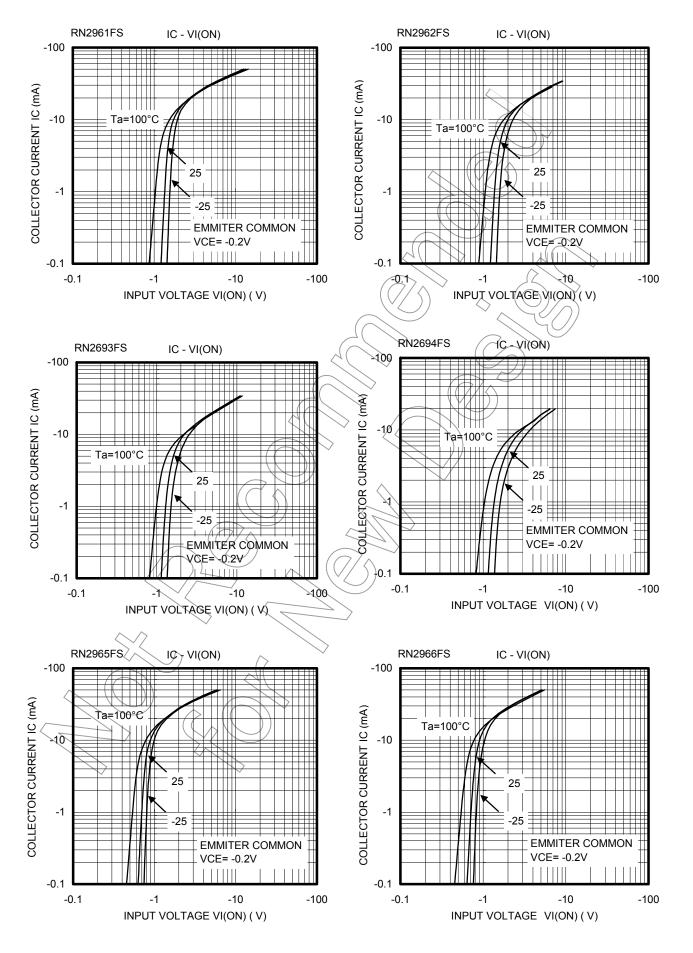
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

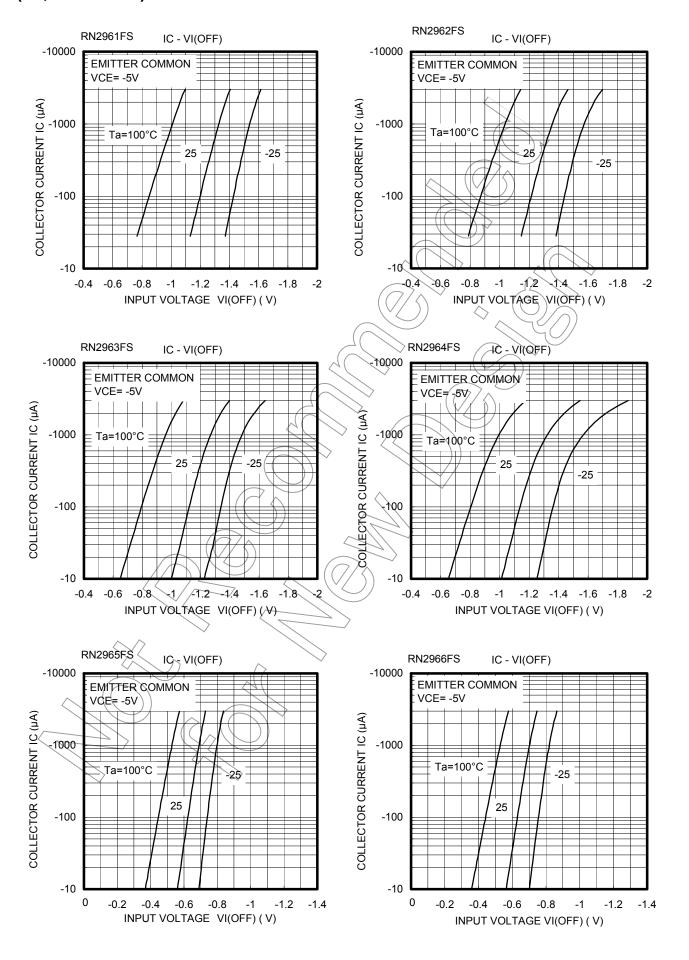
Note 1: Total rating

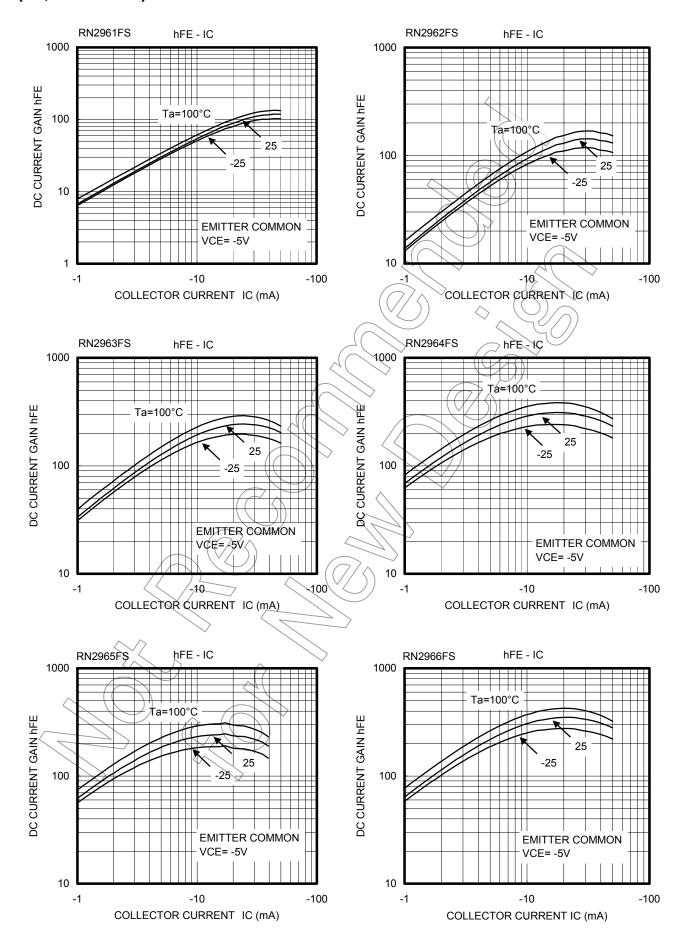


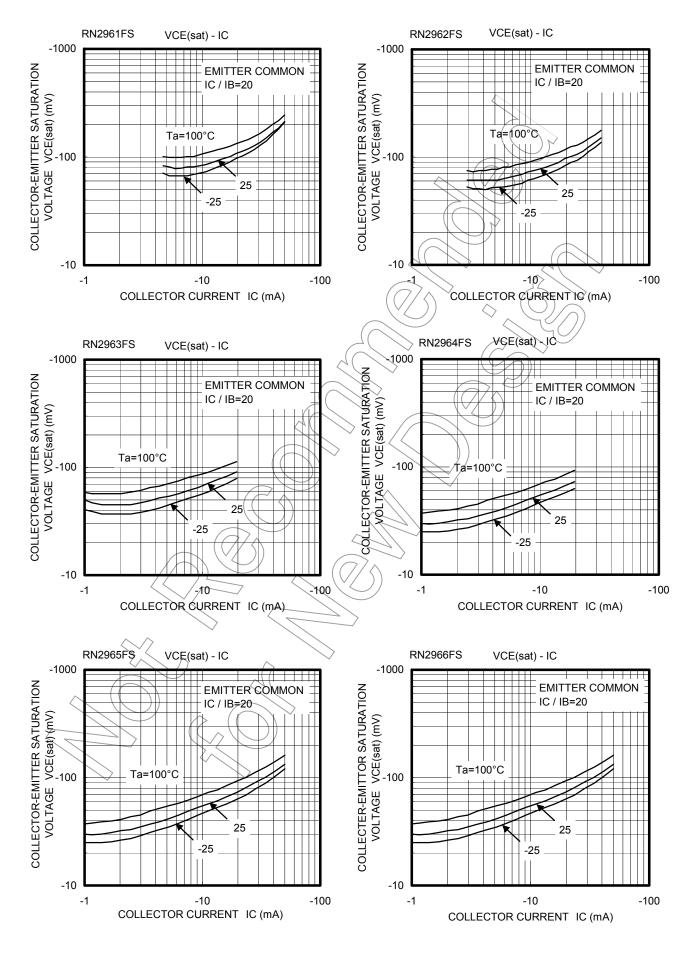
Electrical Characteristics (Ta = 25°C) (Q1, Q2 common)

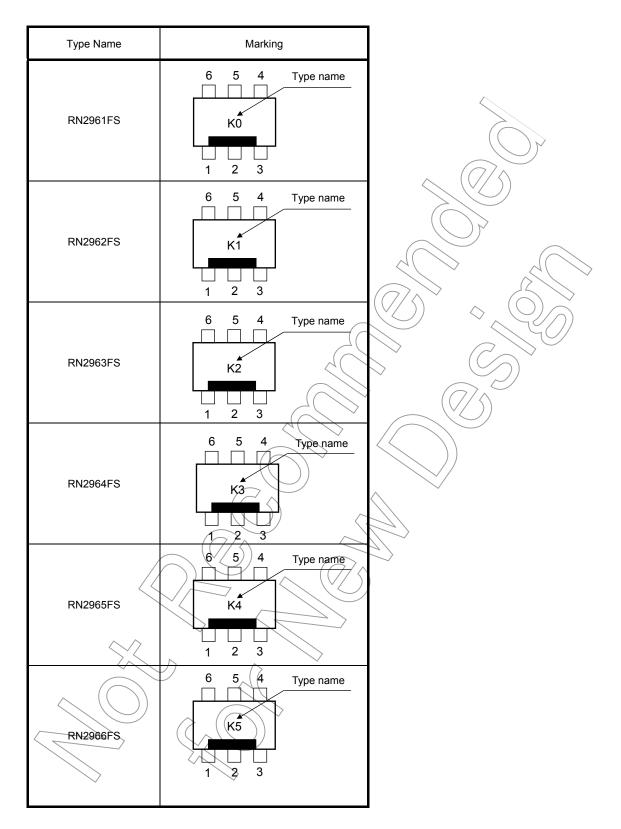
Characteristics		Symbol	Test Condition	Min	Тур.	Max	Unit
Collector cut-off current	RN2961FS~2966FS	I _{CBO}	$V_{CB} = -20 \text{ V}, I_E = 0$	_	_	-100	nA
	RN2901F5~2900F5	ICEO	$V_{CE} = -20 \text{ V}, I_B = 0$		_	-500	ПА
Emitter cut-off current	RN2961FS		V _{EB} = -10 V, I _C = 0	-0.89	_	-1.33	mA
	RN2962FS			0.41	_	-0.63	
	RN2963FS	Inno		0.18) >	-0.29	
	RN2964FS	I _{EBO}		0.088	_	-0.133	
	RN2965FS		$V_{EB} = -5 \text{ V}, I_{C} = 0$	-0.085	_	-0.127	
	RN2966FS			-0.08	_	-0.121	
	RN2961FS		V _{CE} = -5, V,	30	_	_	
DC current gain	RN2962FS			60			
	RN2963FS	h		100	4	\checkmark	
	RN2964FS	h _{FE}	Ic = 10 mA	120	()-//	> —	
	RN2965FS			120) —	
	RN2966FS			120		_	
Collector-emitter saturation voltage	RN2961FS~2966FS	V _{CE} (sat)	$I_C = -5 \text{ mA},$ $I_B \neq -0.25 \text{ mA}$) ()	<u> </u>	-0.15	٧
Input voltage (ON)	RN2961FS		V _C E = -0.2 V, I _C = -5 mA	-1 .0	_	-2.0	V
	RN2962FS) –1.0	_	-2.2	
	RN2963FS	V _I (ON)		-1.1	_	-2.7	
	RN2964FS			-1.2	_	-3.6	
	RN2965FS			-0.6	_	-1.1	
	RN2966FS			-0.6	_	-1.2	
Input voltage (OFF)	RN2961FS~2964FS	V _{I (OFF)}	V _{GE} = −5 V, I _C = −0.1 mA	-0.8	_	-1.5	V
	RN2965FS, 2966FS	VI (OFF)		-0.4	_	-0.8	v
Collector output capacitance	RN2961FS~2966FS	Cob	$V_{CB} = -10 \text{ V, I}_{E} = 0,$ f = 1 MHz	l	1.2		pF
Input resistor	RN2961FS		_	3.76	4.7	5.64	· kΩ
	RN2962FS			8	10	12	
	RN2963FS	R1		17.6	22	26.4	
	RN2964FS			37.6	47	56.4	
	RN2965F\$			1.76	2.2	2.64	
	RN2966FS			3.76	4.7	5.64	
	RN2961F8~2964FS			0.8	1.0	1.2	
Resistor ratio	RN2965FS	R1/R2	_	0.0376	0.0468	0.0562	
	RN2966FS			0.08	0.1	0.12	











Handling Precaution

When handling individual devices (which are not yet mounted on a circuit board), be sure that the environment is protected against electrostatic electricity. Operators should wear anti-static clothing, and containers and other objects that come into direct contact with devices should be made of anti-static materials.

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