Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010 Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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RENESAS

SILICON POWER TRANSISTOR 2SC2335

NPN SILICON TRIPLE DIFFUSED TRANSISTOR FOR HIGH-SPEED HIGH-VOLTAGE SWITCHING

The 2SC2335 is a mold power transistor developed for high-speed high-voltage switching, and is ideal for use as a driver in devices such as switching regulators, DC/DC converters, and high-frequency power amplifiers.

ORDERING INFORMATION

Part No.	Package		
2SC2335	TO-220AB		

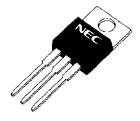
FEATURES

- Low collector saturation voltage: VCE(sat) = 1.0 V MAX. @ Ic = 3.0 A
- Fast switching speed: tr = 1.0 μ s MAX. @Ic = 3.0 A
- Wide base reverse-bias SOA: VCEX(SUS)1 = 450 V MIN. @Ic = 3.0 A

ABSOLUTE MAXIMUM RATINGS (TA = 25°C)

Parameter	Symbol	Conditions	Ratings	Unit
Collector to base voltage	Vсво		500	V
Collector to emitter voltage	VCEO		400	V
Emitter to base voltage	Vebo		7.0	V
Collector current (DC)	IC(DC)		7.0	А
Collector current (pulse)	C(pulse)	PW ≤ 300 <i>µ</i> s,	15	Α
		duty cycle $\leq 10\%$		
Base current (DC)	IB(DC)		3.5	Α
Total power dissipation	Р⊤	Tc = 25°C	40	W
		$T_A = 25^{\circ}C$	1.5	W
Junction temperature	Tj		150	°C
Storage temperature	Tstg		-55 to +150	°C

(TO-220AB)



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ELECTRICAL CHARACTERISTICS (TA = 25°C)

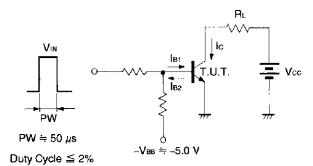
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector to emitter voltage	VCEO(SUS)	Ic = 3.0 A, I _{B1} = 0.6 A, L = 1 mH	400			V
Collector to emitter voltage	VCEX(SUS)1	Ic = 3.0 A, I _{B1} = $-I_{B2}$ = 0.6 A, V _{BE(OFF)} = -5.0 V, L = 180 μ H, clamped	450			V
Collector to emitter voltage	VCEX(SUS)2	Ic = 6.0 A, I _{B1} = 2.0 A, $-I_{B2}$ = 0.6 A, V _{BE(OFF)} = -5.0 V, L = 180 μ H, clamped	400			V
Collector cutoff current	Ісво	$V_{CB} = 400 \text{ V}, \text{ I}_{E} = 0 \text{ A}$			10	μΑ
Collector cutoff current	ICER	V_{CE} = 400 V, R_{BE} = 51 Ω , T_A = 125°C			1.0	mA
Collector cutoff current	ICEX1	$V_{CE} = 400 \text{ V}, \text{ V}_{BE(OFF)} = -1.5 \text{ V}$			10	μA
Collector cutoff current	ICEX2	$\label{eq:Vce} \begin{split} V_{\text{CE}} &= 400 \ \text{V}, \ \text{V}_{\text{BE(OFF)}} = -1.5 \ \text{V}, \\ T_{\text{A}} &= 125^{\circ}\text{C} \end{split}$			1.0	mA
Emitter cutoff current	Іево	VEB = 5.0 V, Ic = 0 A			10	μA
DC current gain	hfe1	$V_{CE} = 5.0 \text{ V}, \text{ Ic} = 0.1 \text{ A}^{Note}$	20		80	
DC current gain	hFE2	$V_{CE} = 5.0 \text{ V}, \text{ Ic} = 1.0 \text{ A}^{\text{Note}}$	20		80	
DC current gain	h _{FE3}	$V_{CE} = 5.0 \text{ V}, \text{ Ic} = 3.0 \text{ A}^{\text{Note}}$	10			
Collector saturation voltage	VCE(sat)	$I_{C} = 3.0 \text{ A}, I_{B} = 0.6 \text{ A}^{Note}$			1.0	V
Base saturation voltage	V _{BE(sat)}	$Ic = 3.0 A, I_B = 0.6 A^{Note}$			1.2	V
Turn-on time	ton	Ic = 3.0 A, R∟ = 50 Ω,			1.0	μs
Storage time	tstg	$I_{B1} = -I_{B2} = 0.6 \text{ A}, \text{ Vcc} \cong 150 \text{ V}$			2.5	μs
Fall time	tr	Refer to the test circuit.			1.0	μs

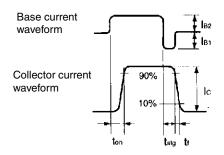
Note Pulse test PW \leq 350 μ s, duty cycle \leq 2%

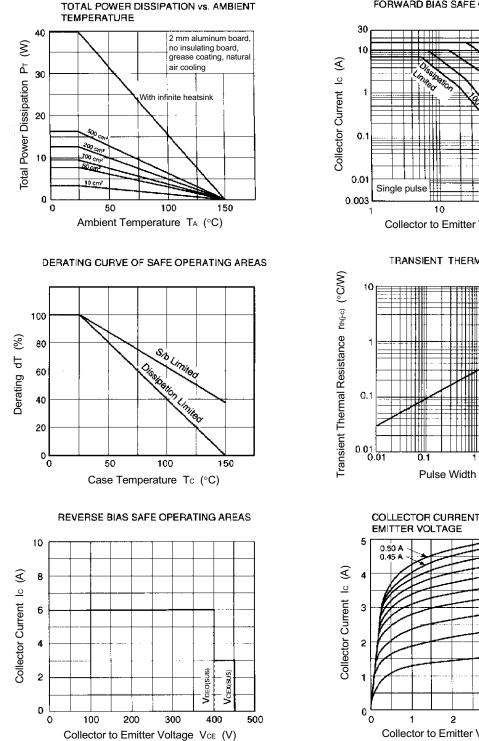
hfe CLASSIFICATION

Marking	М	L	К
hfe2	20 to 40	30 to 60	40 to 80

SWITCHING TIME (ton, tstg, tf) TEST CIRCUIT

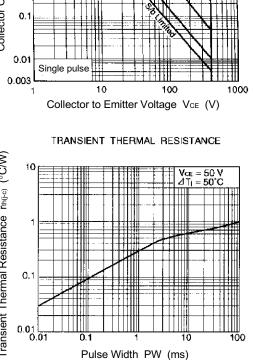




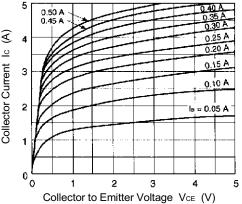


TYPICAL CHARACTERISTICS (TA = 25°C)

FORWARD BIAS SAFE OPERATING AREAS

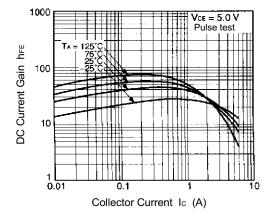


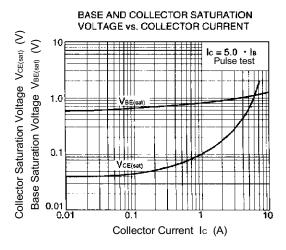
COLLECTOR CURRENT vs. COLLECTOR TO



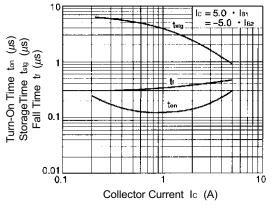
DC CURRENT GAIN vs. COLLECTOR CURRENT

NEC



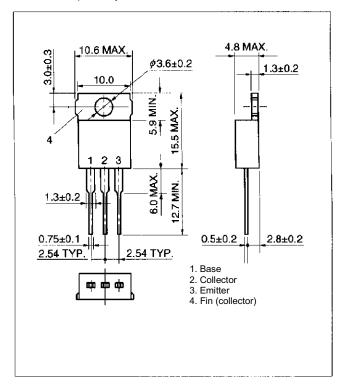






PACKAGE DRAWING (UNIT: mm)

TO-220AB (MP-25)



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