



SANYO Semiconductors

## DATA SHEET

# 2SC4161

NPN Triple Diffused Planar Silicon Transistor

## Switching Regulator Applications

### Features

- High breakdown voltage, high reliability.
- High-speed switching ( $t_f$  : 0.1 $\mu$ s typ).
- Wide ASO.
- Adoption of MBIT process.
- Micaless package facilitating mounting.

### Specifications

Absolute Maximum Ratings at  $T_a=25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		500	V
Collector-to-Emitter Voltage	$V_{CEO}$		400	V
Emitter-to-Base Voltage	$V_{EBO}$		7	V
Collector Current	$I_C$		7	A
Collector Current (Pulse)	$I_{CP}$	$PW \leq 300\mu\text{s}$ , duty cycle $\leq 10\%$	14	A
Base Current	$I_B$		3	A
Collector Dissipation	$P_C$		2	W
		$T_c=25^\circ\text{C}$	30	W
Junction Temperature	$T_J$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

Electrical Characteristics at  $T_a=25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=400\text{V}$ , $I_E=0\text{A}$			10	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=5\text{V}$ , $I_C=0\text{A}$			10	$\mu\text{A}$

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**SANYO Semiconductor Co., Ltd.**

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

# 2SC4161

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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
DC Current Gain	hFE1	VCE=5V, IC=0.8A	15*		50*	
	hFE2	VCE=5V, IC=4A	10			
	hFE3	VCE=5V, IC=10mA	10			
Gain-Bandwidth Product	fT	VCE=10V, IC=0.8A		20		MHz
Output Capacitance	Cob	VCB=10V, f=1MHz		80		pF
Collector-to-Emitter Saturation Voltage	VCE(sat)	IC=4A, IB=0.8A			0.8	V
Base-to-Emitter Saturation Voltage	VBE(sat)	IC=4A, IB=0.8A			1.5	V
Collector-to-Base Breakdown Voltage	V(BR)CBO	IC=1mA, IE=0A	500			V
Collector-to-Emitter Breakdown Voltage	V(BR)CEO	IC=5mA, RBE=∞	400			V
Emitter-to-Base Breakdown Voltage	V(BR)EBO	IE=1mA, IC=0A	7			V
Collector-to-Emitter Sustain Voltage	VCEX(sus)	IC=3A, IB1=0.3A, IB2=-1.2A, L=1mH, Clamped	400			V
Turn-ON Time	ton	IC=5A, IB1=1A, IB2=-2A, RL=40Ω, VCC=200V			0.5	μs
Storage Time	tstg	IC=5A, IB1=1A, IB2=-2A, RL=40Ω, VCC=200V			2.5	μs
Fall Time	tf	IC=5A, IB1=1A, IB2=-2A, RL=40Ω, VCC=200V			0.3	μs

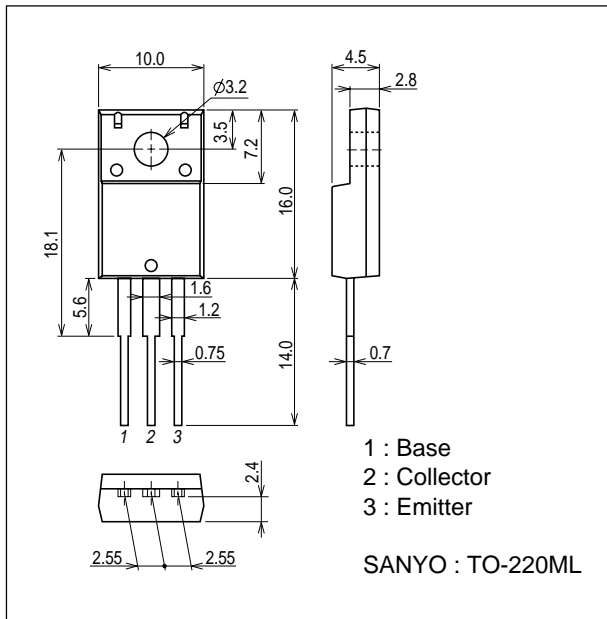
\* : The hFE1 of the 2SC4161 is classified as follows. When specifying the hFE1 rank, specify two ranks or more in principle.

Rank	L	M	N
hFE	15 to 30	20 to 40	30 to 50

## Package Dimensions

unit : mm (typ)

7508-002



## Switching Time Test Circuit

