Ordering number:EN3176A

PNP/NPN Epitaxial Planar Silicon Transistors

2SB1397/2SD2100

Compact Motor Driver Applications

Features

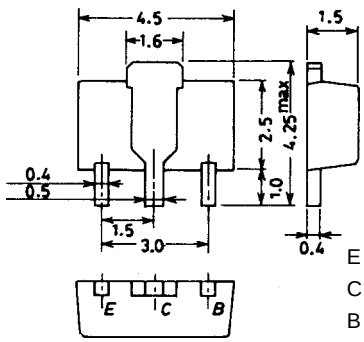
- Low saturation voltage.
- Contains diode between collector and emitter.
- Contains bias resistance between base and emitter.
- Large current capacity.
- Small-sized package making it easy to provide high-density, small-sized hybrid ICs.

Package Dimensions

unit:mm

2038

[2SB1397/2SD2100]



E : Emitter
C : Collector
B : Base
SANYO : PCP
(Bottom view)

( ) : 2SB1397

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)25	V
Collector-to-Emitter Voltage	V_{CEO}		(–)20	V
Emitter-to-Base Voltage	V_{EBO}		(–)6	V
Collector Current	I_C		(–)2	A
Collector Current (Pulse)	I_{CP}		(–)4	A
Collector Dissipation	P_C	Mounted on ceramic board (250mm^2×0.8mm)	1.3	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

Electrical Characteristics at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=(–)20V, I_E=0			(–)1.0	μA
DC Current Gain	$h_{FE}1$	V_{CE}=(–)2V, I_C=(–)0.5A	(–)70			
	$h_{FE}2$	V_{CE}=(–)2V, I_C=(–)2A	(–)50			
Gain-Bandwidth Product	f_T	V_{CE}=(–)2V, I_C=(–)0.5A		(300)		MHz
				200		MHz
Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		(40)25		pF

Marking : 2SB1397 : BP
2SD2100 : DP

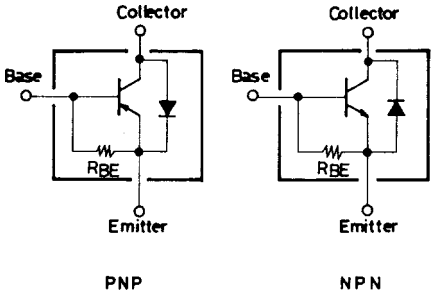
■ Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your SANYO representative nearest you before using any SANYO products described or contained herein in such applications.

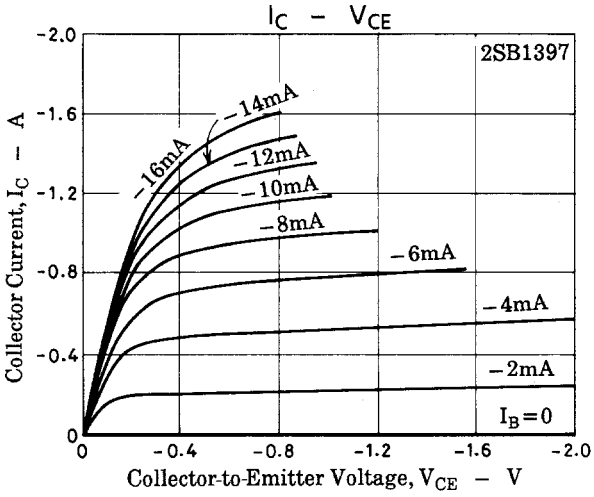
■ SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges,or other parameters) listed in products specifications of any and all SANYO products described or contained herein.

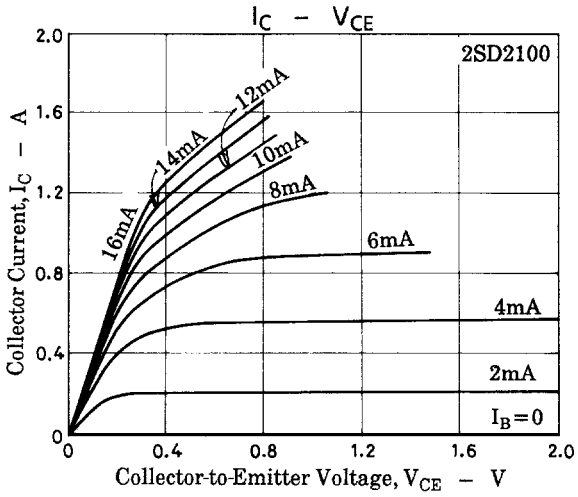
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

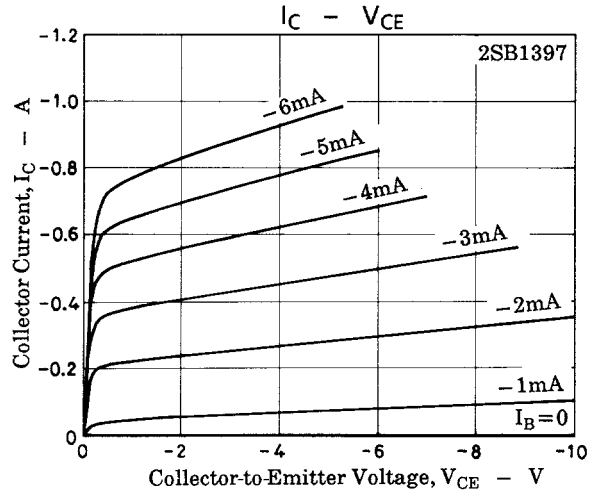
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)1A, I_B=(–)50mA		(–)0.25	(–)0.5	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)1A, I_B=(–)50mA			(–)1.5	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)25			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO1}$	I_C=(–)10μA, R_{BE}=∞	(–)25			V
	$V_{(BR)CEO2}$	I_C=(–)10mA, R_{BE}=∞	(–)20			V
Diode Forwad Voltage	V_F	I_F=0.5A			(–)1.5	kΩ
Base-to-Emitter Resistance	R_{BE}			1.6		

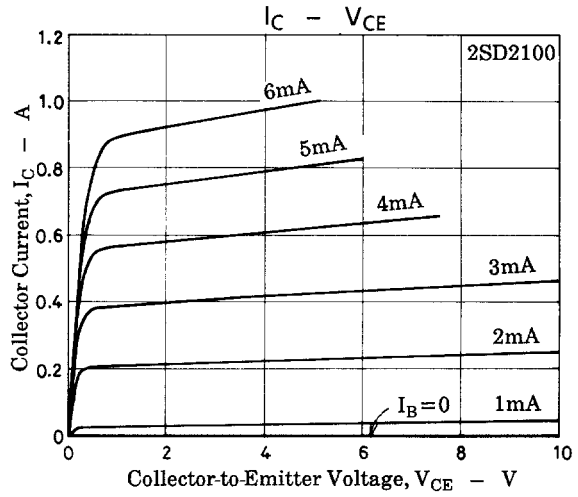
Electrical Connection

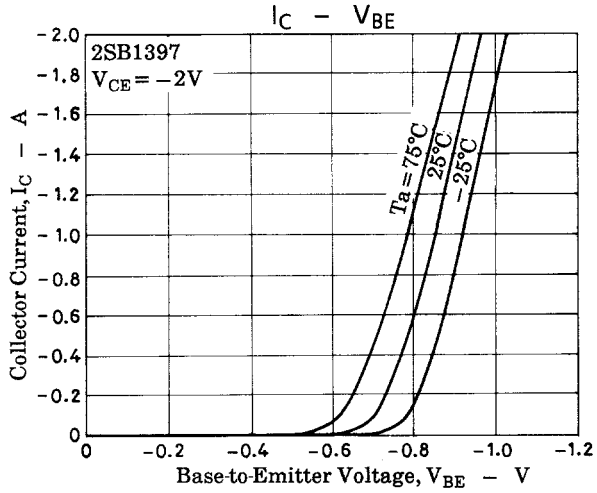


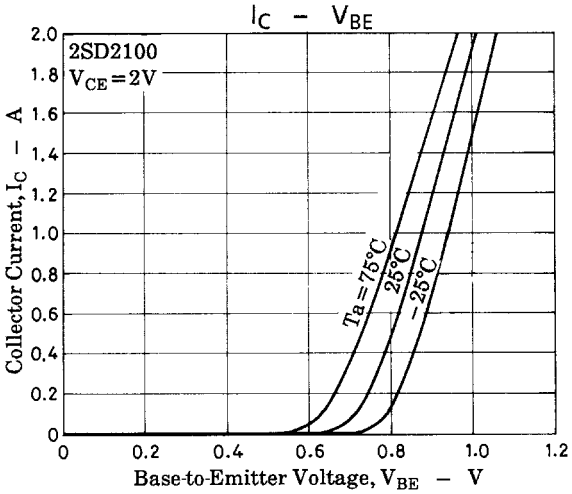


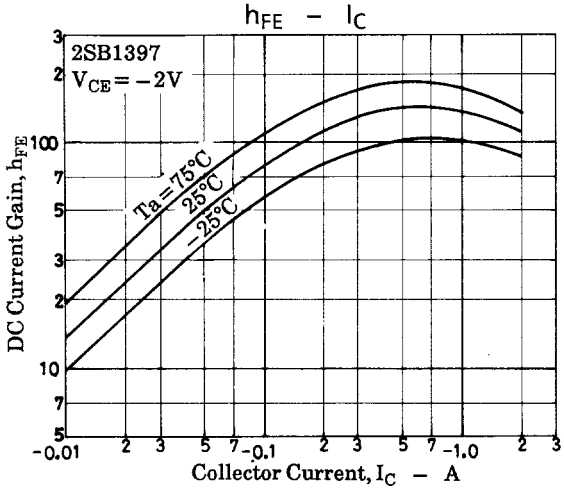


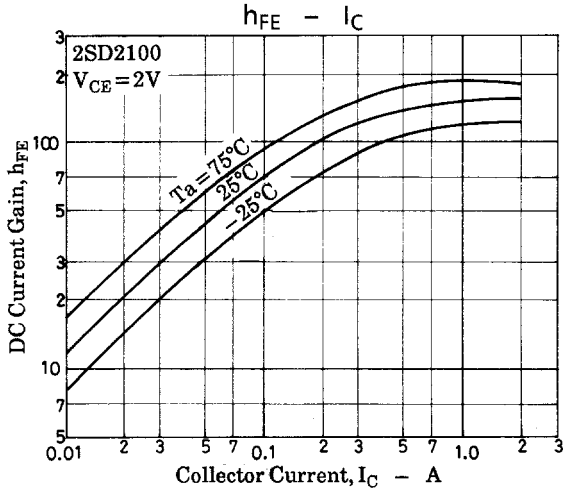


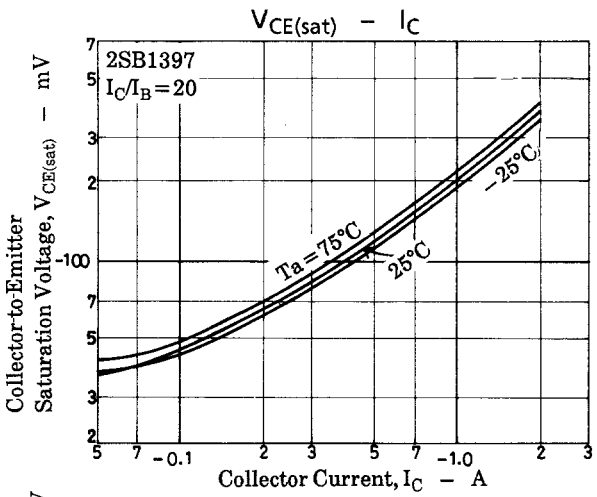


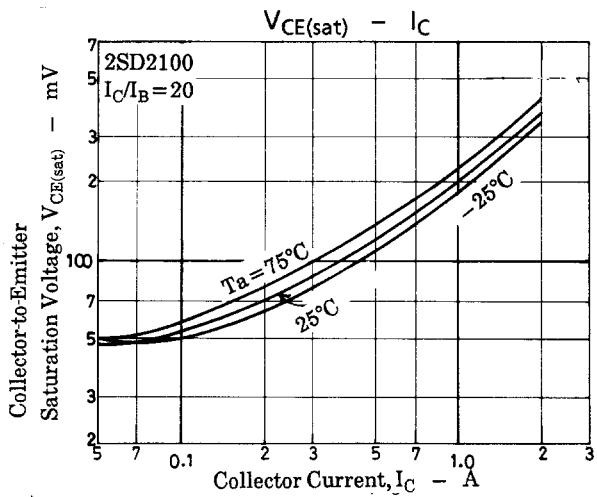

I_C – V_{BE}
2SB1397
V_{CE} = –2V
Ta = 75°C
25°C
–25°C
Collector Current, I_C – A
Base-to-Emitter Voltage, V_{BE} – V

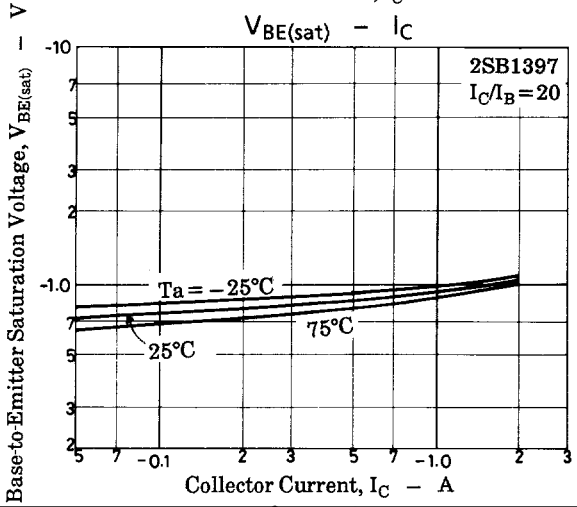

I_C – V_{BE}
2SD2100
V_{CE} = 2V
Ta = 75°C
25°C
–25°C
Collector Current, I_C – A
Base-to-Emitter Voltage, V_{BE} – V

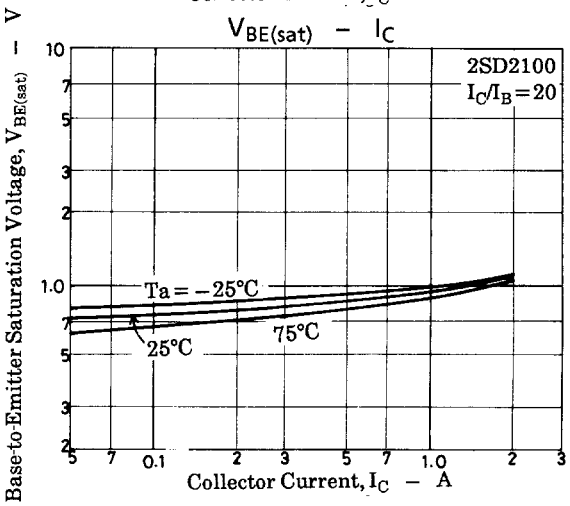

h_{FE} – I_C
2SB1397
V_{CE} = –2V
Ta = 75°C
25°C
–25°C
DC Current Gain, h_{FE}
Collector Current, I_C – A

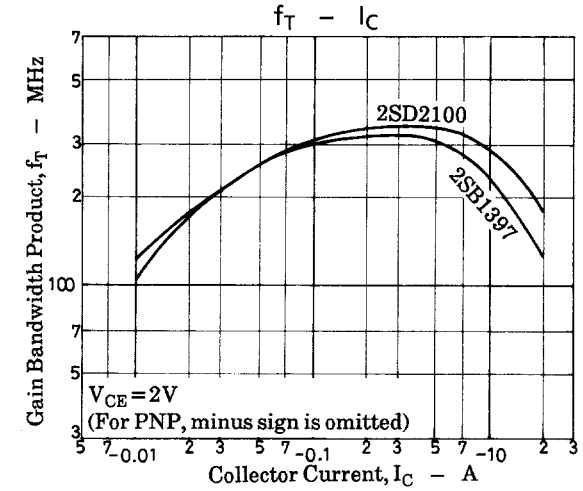

h_{FE} – I_C
2SD2100
V_{CE} = 2V
Ta = 75°C
25°C
–25°C
DC Current Gain, h_{FE}
Collector Current, I_C – A

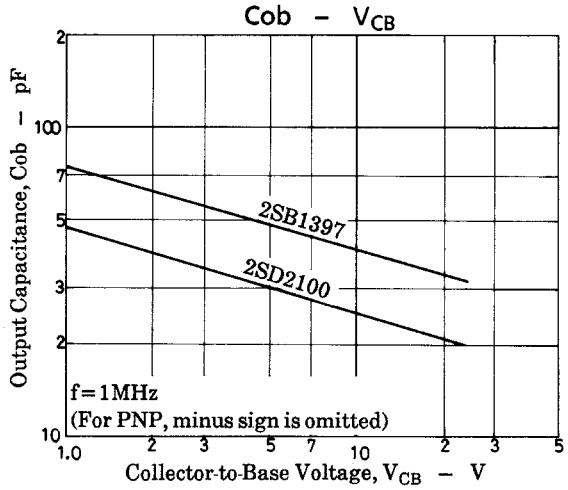

$V_{CE(sat)}$ – I_C
2SB1397
I_C/I_B = 20
Ta = 75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, $V_{CE(sat)}$ – mV
Collector Current, I_C – A

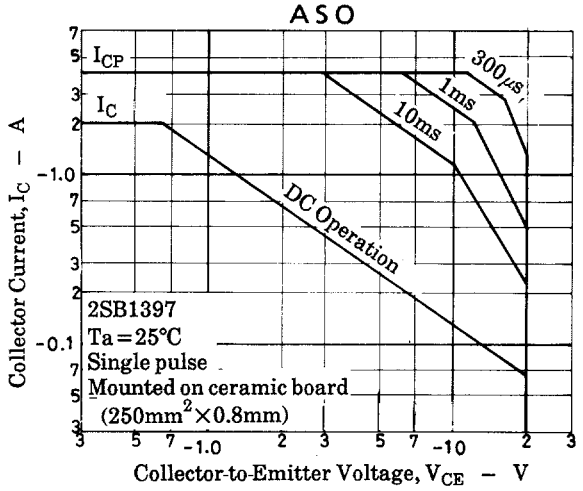

$V_{CE(sat)}$ – I_C
2SD2100
I_C/I_B = 20
Ta = 75°C
25°C
–25°C
Collector-to-Emitter Saturation Voltage, $V_{CE(sat)}$ – mV
Collector Current, I_C – A

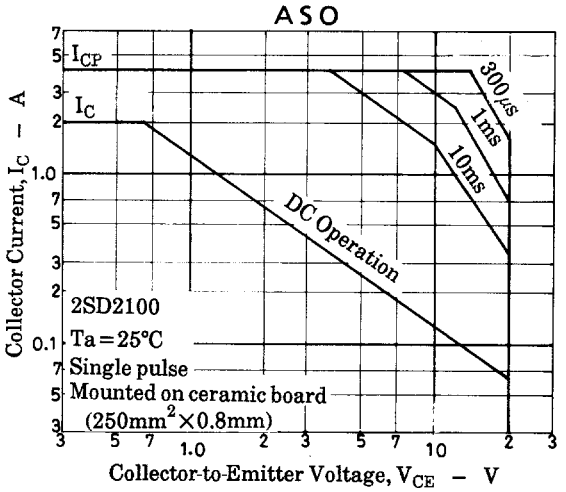

$V_{BE(sat)}$ – I_C
2SB1397
I_C/I_B = 20
Ta = –25°C
25°C
75°C
Base-to-Emitter Saturation Voltage, $V_{BE(sat)}$ – V
Collector Current, I_C – A

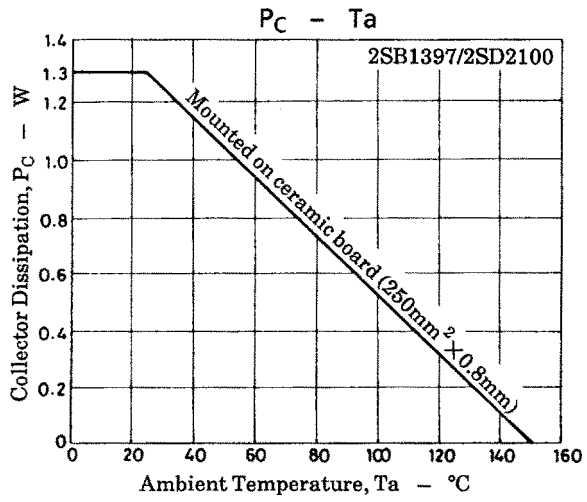

$V_{BE(sat)}$ – I_C
2SD2100
I_C/I_B = 20
Ta = –25°C
25°C
75°C
Base-to-Emitter Saturation Voltage, $V_{BE(sat)}$ – V
Collector Current, I_C – A


fT – IC
Gain Bandwidth Product, fT – MHz
2SD2100
2SB1397
VCE=2V
(For PNP, minus sign is omitted)
Collector Current, IC – A


Cob – VCB
Output Capacitance, Cob – pF
2SB1397
2SD2100
f=1MHz
(For PNP, minus sign is omitted)
Collector-to-Base Voltage, VCB – V


ASO
ICP
IC
300μs
1ms
10ms
DC Operation
2SB1397
Ta=25°C
Single pulse
Mounted on ceramic board
(250mm2×0.8mm)
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V


ASO
ICP
IC
300μs
1ms
10ms
DC Operation
2SD2100
Ta=25°C
Single pulse
Mounted on ceramic board
(250mm2×0.8mm)
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V


PC – Ta
2SB1397/2SD2100
Mounted on ceramic board (250mm2×0.8mm)
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C

■ Specifications of any and all SANYO products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.

■ SANYO Electric Co., Ltd. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.

■ In the event that any or all SANYO products(including technical data,services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.

■ No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of SANYO Electric Co., Ltd.

■ Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the SANYO product that you intend to use.

■ Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of October, 1998. Specifications and information herein are subject to change without notice.