Microsemi PPC, Inc.
Progress Powered by Technology

7516 Central Industrial Drive
Riviera Beach, Florida
33404
PHONE: (561) 842-0305
FAX: (561) 845-7813

2N3585

5 Amp, 500V, High Voltage NPN Silicon Power Transistors

APPLICATIONS:

- Off-Line Inverters
- Switching Regulators
- Motor Controls
- Deflection Circuits
- DC-DC Converters
- High Voltage Amplifiers

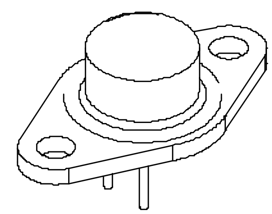
FEATURES:

- High Voltage: 250 to 500V
- Fast Switching: $t_f < 3\mu$ sec.
- High Power: 35 Watts
- High Current: 2 Amps
- Low $V_{CE\,(SAT)}$

DESCRIPTION:

These power transistors are produced by PPC's DOUBLE DIFFUSED PLANAR process. This technology produces high voltage devices with excellent switching speeds, frequency response, gain linearity, saturation voltages, high current gain, and safe operating areas. They are intended for use in Commercial, Industrial, and Military power switching, amplifier, and regulator applications.

Ultrasonically bonded leads and controlled die mount techniques are utilized to further increase the SOA capability and inherent reliability of these devices. The temperature range to 200°C permits reliable operation in high ambients, and the hermetically sealed package insures maximum reliability and long life.



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ABSOLUTE MAXIMUM RATINGS:

SYMBOL	CHARACTERISTIC	VALUE	UNITS
V_{CBO}*	Collector-Base Voltage	500	Volts
V_{CEO}*	Collector-Emitter Voltage	300	Volts
V_{CER}*	Collector-Emitter Voltage $R_{BE} = 50\Omega$	400	Volts
V_{EBO}*	Emitter-Base Voltage	6	Volts
I_C*	Peak Collector Current	5	Amps
I_C*	Continuous Collector Current	2	Amps
I_B*	Base Current	1	Amps
T_{STG}*	Storage Temperature	-65 to 200	°C
T_J*	Operating Junction Temperature	-65 to 200	°C
*	Lead Temperature 1/16" from Case for 10 Sec.	235	°C
P_T*	Power Dissipation $T_C = 25°C$	35	Watts
θ JC	Thermal Impedance	5.0	°C/W

* Indicates JEDEC registered data.

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ELECTRICAL CHARACTERISTICS:
(25°Case Temperature Unless Otherwise Noted)

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VALUE		Units
			Min.	Max.	
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage	I_C = 0.2 Amp (Notes 1 and 2)	300	----	Volts
$V_{CER(sus)}$	Collector-Emitter Sustaining Voltage	I_C = 0.2A, R_{BE} = 50Ω (Notes 1 and 2)	400	----	Volts
I_{CEV}*	Collector Cutoff Current	V_{CE} = 450V, V_{BE} = -1.5V	----	1.0	mA.
I_{CEV}*	Collector Cutoff Current T_C = 150°C	V_{CE} = 300V, V_{BE} = -1.5V	----	3.0	mA.
I_{CEO}*	Collector Cutoff Current	V_{CE} = 150V, I_B = 0	----	5.0	mA.
I_{EB0}*	Emitter Cutoff Current	V_{EB} = 6V, I_C = 0	----	0.5	mA.
h_{FE}*	DC Forward Current Transfer Ratio (Note 1)	I_C = 0.1A, V_{CE} = 10V I_C = 1.0A, V_{CE} = 10V I_C = 1.0A, V_{CE} = 2V	40 25 8	---- 100 80	---- ---- ----
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage (Note 1)	I_C = 1.0A, I_B = 0.125A	----	0.75	Volts
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage (Note 1)	I_C = 1.0A, I_B = 0.10A	----	1.4	Volts
$I_{S/b}$	Second-Breakdown Collector Current (with base forward biased)	V_{CE} = 100V, t = 1.0sec.	0.35	----	A
$E_{S/b}$*	Second-Breakdown Energy (with base reverse biased)	V_{EB} = 4V, R_{BE} = 20Ω, L = 100μh	200	----	μJ
h_{fe}*	Common-Emitter Small-Signal Forward Current Transfer Ratio	V_{CE} = 10V, I_C = 0.2A, f = 5 MHz	3	----	----
$\mid h_{fe} \mid$*	Common-Emitter Small-Signal Forward Current Transfer Ratio, f = 5 MHz	V_{CE} = 10V, I_C = 0.2A	2.0	----	----
C_{Ob}	Collector-Base Capacitance	V_{CB} = 10V, I_E = 0, f = 1.0MHz	----	120	pf
tr*	Rise Time	I_C = 1.0A, I_{B2} = 0.10A	----	3.0	μsec.
ts*	Storage Time	I_C = 1.0A, I_{B1} = I_{B2} = 0.10A	----	4.0	μsec.
tf*	Fall Time	I_C = 1.0A, I_{B1} = I_{B2} = 0.10A	----	3.0	μsec.

Note 1: Pulse Test: Pulse width = 300μSec., Rep. Rate 60Hz.

Note 2: Caution - Do not use Curve Tracer.

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PACKAGE MECHANICAL DATA: