

ITC14410012D

POWERLINE N-CHANNEL IGBT CHIP

FEATURES

- n - Channel.
- Enhancement Mode.
- High Input Impedance.
- High Switching Speed.
- Latch-Free Operation.
- Low Forward Voltage Drop.
- Short Circuit Capability (10μs).

TYPICAL KEY PARAMETERS (25°C)

V_{CES}	1200V
$I_{C(ONT)}$	100A
$V_{CE(sat)}$	2.8V

RATINGS

Symbol	Parameter	Test Conditions	Max.	Units
V_{CES}	Collector-emitter voltage	$V_{GE} = 0V$	1200	V
V_{GE}	Gate-emitter voltage	-	±20	V
$I_{C(ONT)}$	Continuous collector current	-	100	A
$I_{C(PK)}$	Peak collector current	$t_p = 1ms$	200	A

STATIC ELECTRICAL CHARACTERISTICS

Measured under pulse conditions $T_{case} = 25^{\circ}C$

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
I_{CES}	Collector cut-off current	$V_{GE} = 0V, V_{CE} = V_{CES}$	-	-	250	μA
I_{GES}	Gate leakage current	$V_{GE} = \pm 20V$	-	-	±500	nA
$V_{GE(TH)}$	Gate threshold voltage	$I_C = 5mA, V_{CE} = V_{GE}$	4.0	-	7.5	V
$V_{CE(sat)}$	Collector-emitter saturation voltage	$I_C = 100A, V_{GE} = 15V$	-	2.8	3.6	V
				3.0	3.6	V
		$I_C = 200A, V_{GE} = 15V$	-	3.9	5.0	V
				4.5	5.4	V

All ratings given assuming suitable mountdown of chip.

AC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
C_{ies}	Input capacitance	$V_{GE} = 0V, V_{CE} = 25V, f = 1MHz, T_{case} = 25^{\circ}C$	-	13500	-	pF
C_{oes}	Output capacitance	$V_{GE} = 0V, V_{CE} = 25V, f = 1MHz, T_{case} = 25^{\circ}C$	-	750	-	pF
C_{res}	Reverse transfer capacitance	$V_{GE} = 0V, V_{CE} = 25V, f = 1MHz, T_{case} = 25^{\circ}C$	-	900	-	pF

INDUCTIVE SWITCHING CHARACTERISTICS

$T_{case} = 125^{\circ}C$ unless stated otherwise.

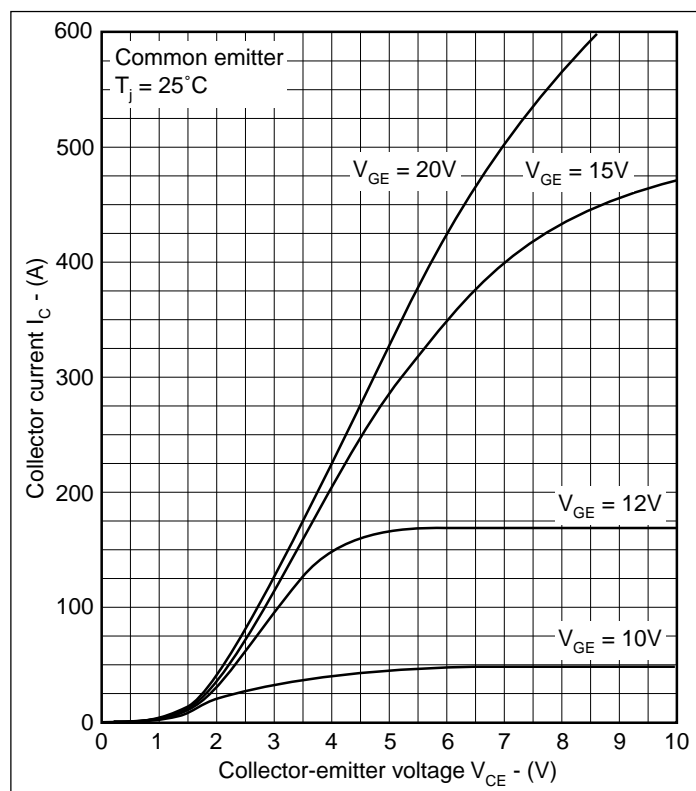
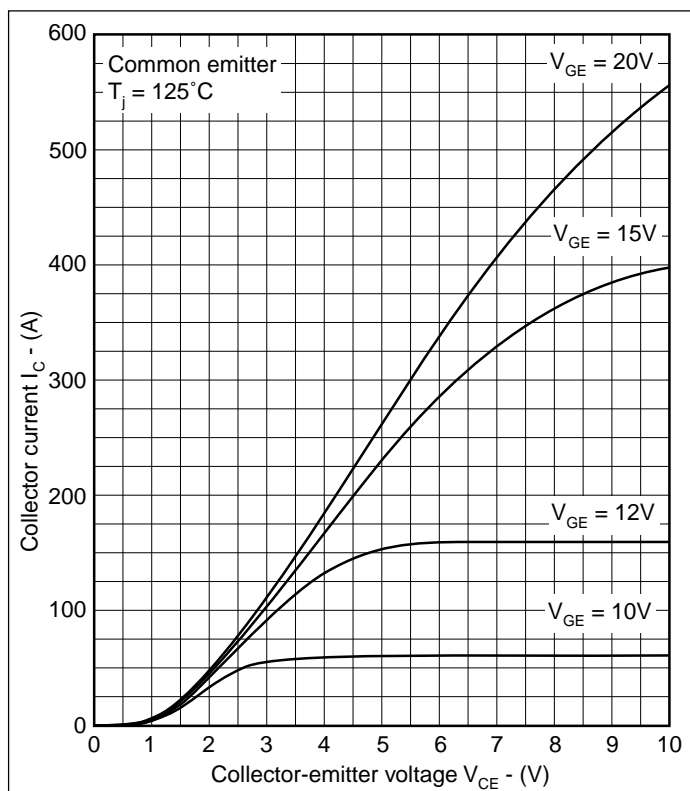
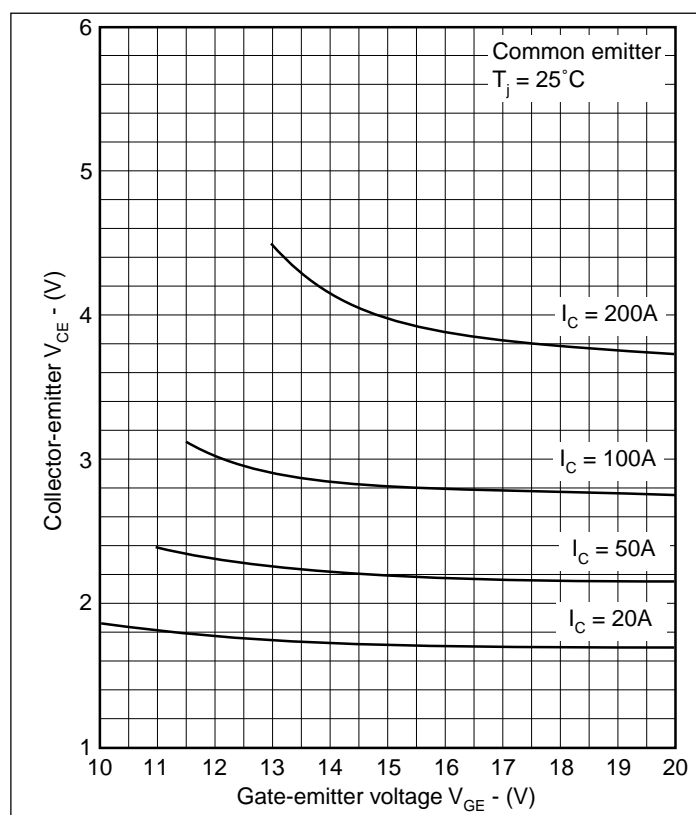
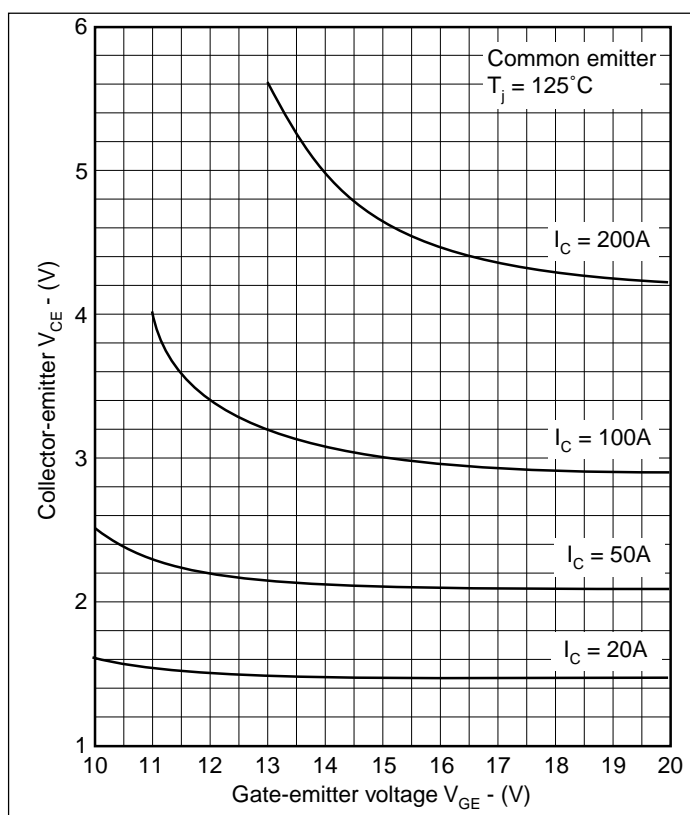
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
$t_{d(off)}$	Turn-off delay time	Inductive load $I_C = 100A$ $V_{CE} = 50\% V_{CES},$ $V_{GE} = \pm 15V,$ $R_G = 6.6\Omega$	-	620	-	ns
t_f	Fall time		-	840	-	ns
E_{OFF}	Turn-off energy loss		-	28	-	mJ
$t_{d(on)}$	Turn-on delay time		-	750	-	ns
t_r	Rise time		-	190	-	ns
E_{ON}	Turn-on energy loss		-	28	-	mJ

THERMAL CHARACTERISTICS

Symbol	Parameter	Conditions	Max.	Units
T_j	Junction temperature	-	150	$^{\circ}C$
T_{stg}	Storage temperature	-	-55 to +150	$^{\circ}C$

All ratings given assuming suitable mountdown of chip.

CURVES

Fig.1 Typical output characteristics @ 25°C Fig.2 Typical output characteristics @ 125°C Fig.3 Typical transfer characteristics @ 25°C Fig.4 Typical transfer characteristics @ 125°C

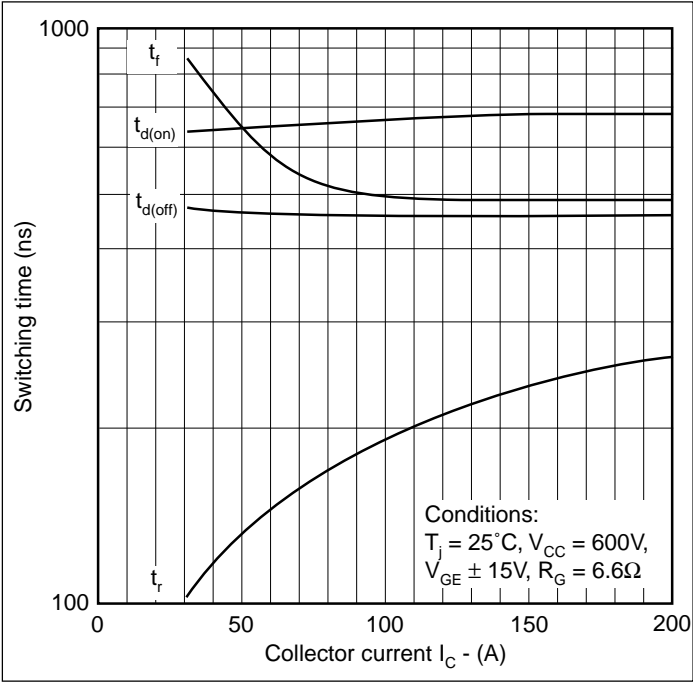


Fig.5 Typical switching time vs I_C @ 25°C

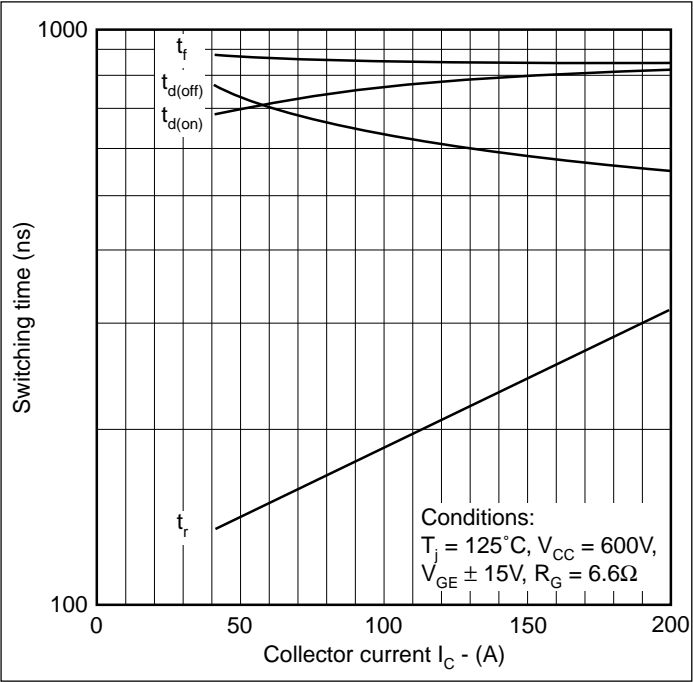


Fig.6 Typical switching time vs I_C @ 125°C

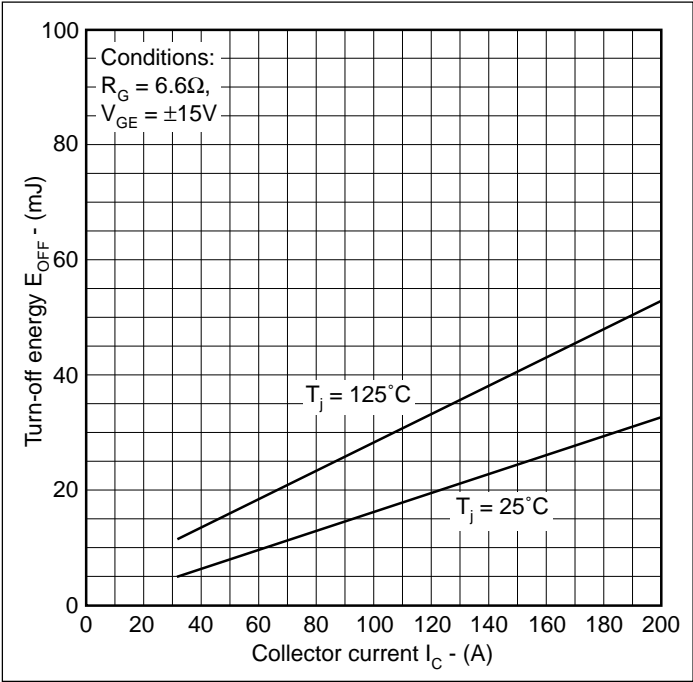


Fig.7 Typical turn-off losses

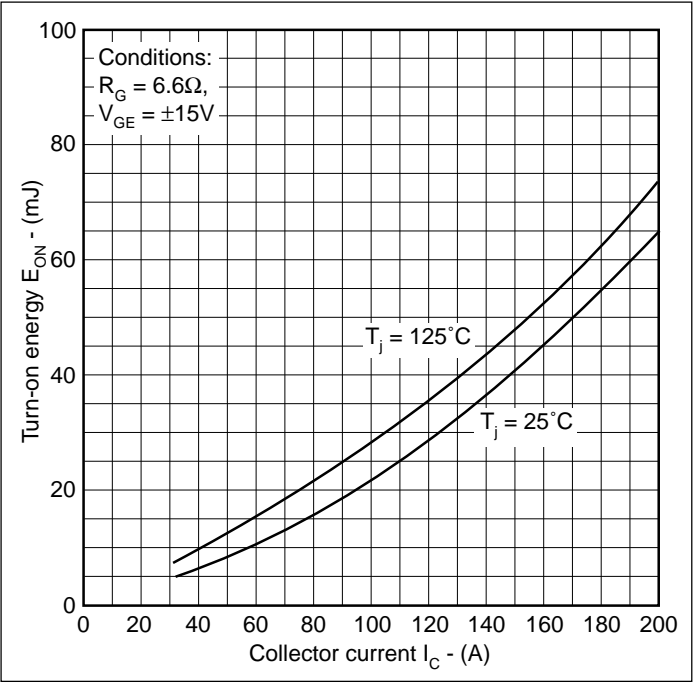


Fig.8 Typical turn-on losses

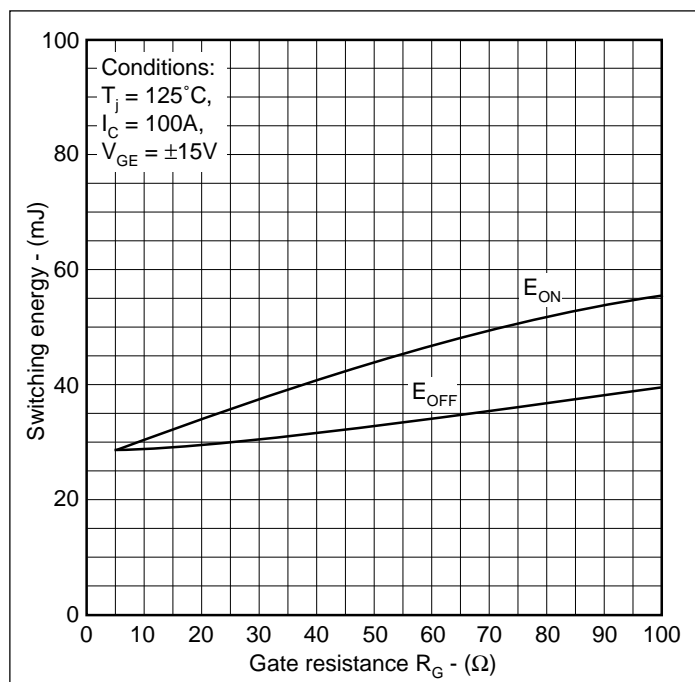


Fig.9 Typical switching energy

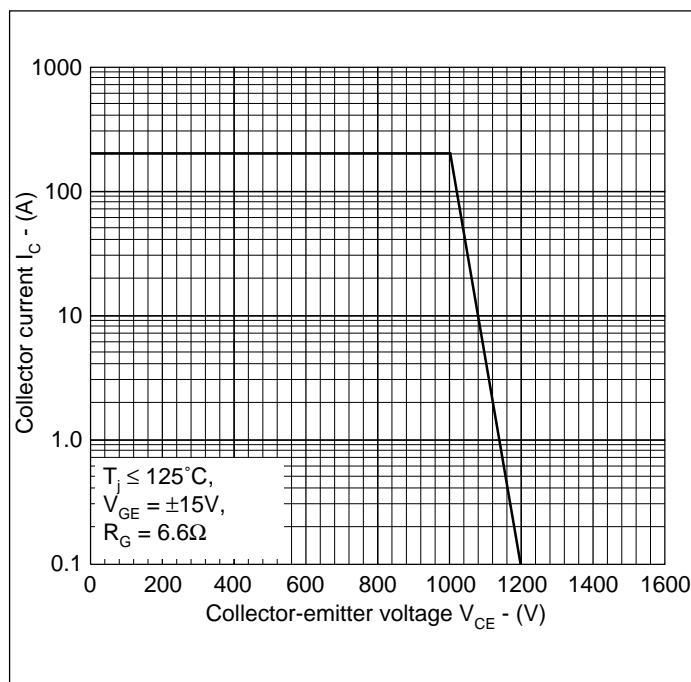


Fig.10 Reverse bias safe operating area

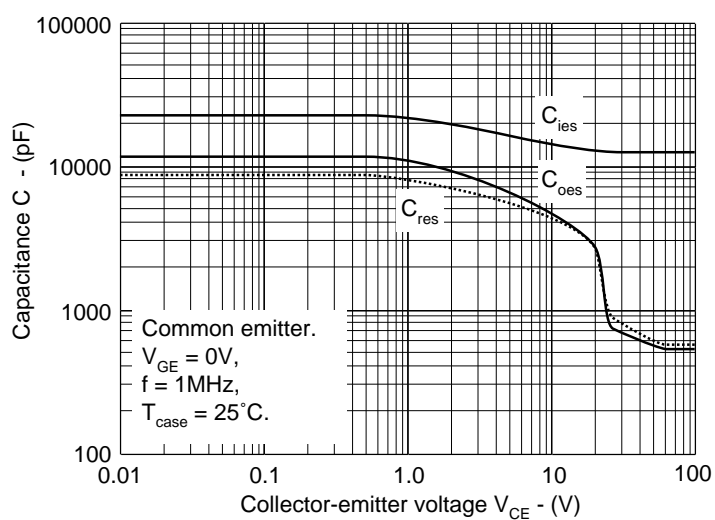
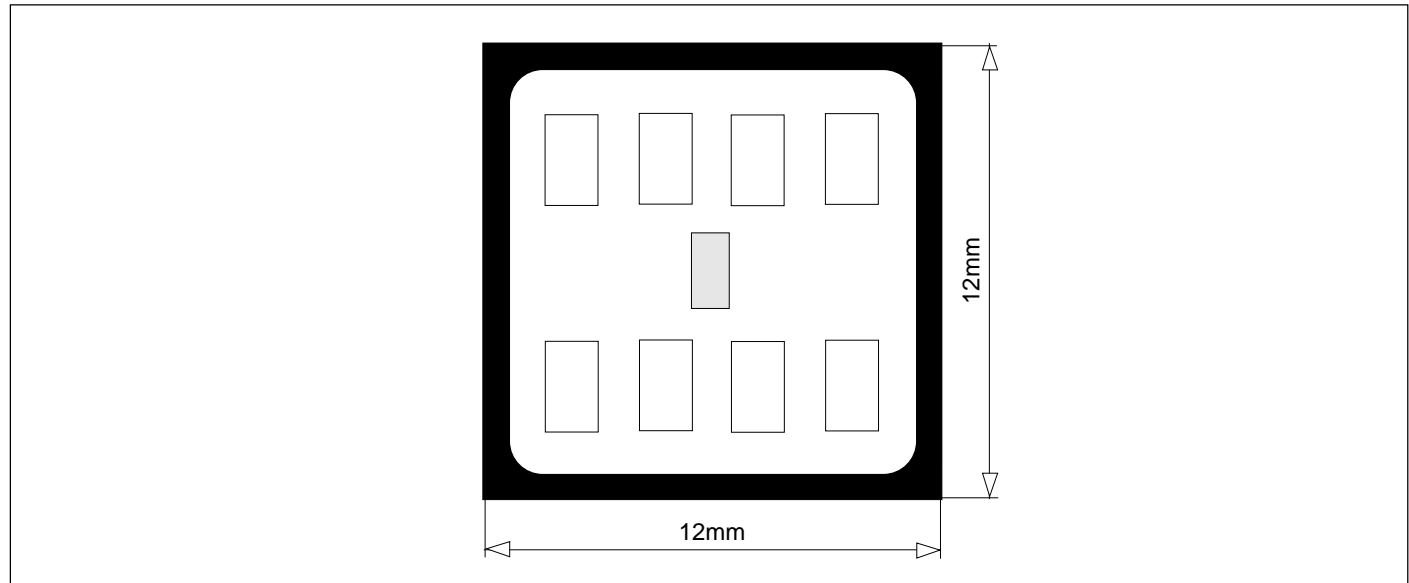


Fig.11 Typical capacitance

CHIP DETAILS

All dimensions in mm, unless stated otherwise. DO NOT SCALE.



Typical chip thickness: 600µm.

Wire sizes: 8 bondwires $\geq 300\mu\text{m}$ Ø.

Composition of wire: 99.999% Aluminium.

Back metal: Aluminium, Titanium, Nickel, Silver.

T_{max} for chip **NOT** to exceed 275°C for more than 15 minutes during soldering, using 96S solder.

Packing for shipment is either membrane or waffle tray.

Static sensitive device to MIL-STD-883C.



HEADQUARTERS OPERATIONS

GEC PLESSEY SEMICONDUCTORS

Cheney Manor, Swindon,
Wiltshire, SN2 2QW, United Kingdom.
Tel: + 44 (0)1793 518000
Fax: + 44 (0)1793 518411

GEC PLESSEY SEMICONDUCTORS

P.O. Box 660017
1500 Green Hills Road,
Scotts Valley, California 95067-0017,
United States of America.
Tel: + 1 (408) 438 2900
Fax: + 1 (408) 438 5576

POWER PRODUCT CUSTOMER SERVICE CENTRES

- **FRANCE.** 2 rue Henri-Bergson, 92665 Asnieres Cedex.
Tel: + 33 1 40 80 54 00. Fax: + 33 1 40 80 55 87.
- **GERMANY.** Ungererstrasse 129, 80505 München.
Tel: + 49 (0)89 36 09 060. Fax: + 49 (0)89 36 09 06 55.
- **NORTH AMERICA.** At Dedham Place, Suite 125, 3 Allied Drive, Dedham. MA 02026.
Tel: + 1 617 251 0126. Fax: + 1 617 251 0106.
- **UNITED KINGDOM.** Doddington Road, Lincoln. LN6 3LF.
Tel: + 44 (0)1522 500500. Fax: + 44 (0)1522 500550.

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