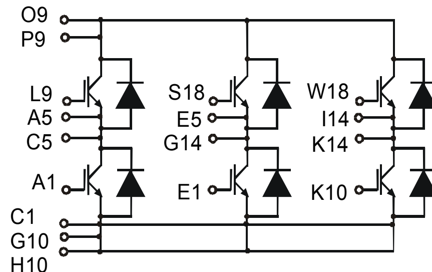
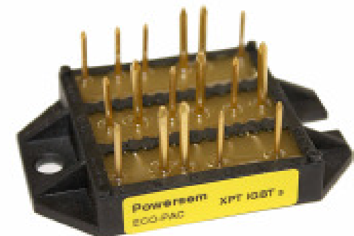
IGBT Module PSIIX 20/12

Preliminary Data Sheet

I_{C25} = 28 A
V_{CES} = 1200 V
$V_{CE(sat)typ.}$ = 2.1 V





PSIIX 20/12

IGBTs

Symbol	Conditions	Maximum Ratings	
V_{CES}	T_{VJ} = 25°C to 150°C	1200	V
V_{GES}		± 20	V
I_{C25}	T_C = 25°C	28	A
I_{C80}	T_C = 80°C	17	A
I_{CM}	V_{GE} = ±15 V; R_G = 56 Ω; T_{VJ} = 125°C	45	A
V_{CEK}	RBSOA, Clamped inductive load; L = 100 µH	V_{CES}	
t_{SC} (SCSOA)	V_{CE} = 900 V; V_{GE} = ±15 V; R_G = 56 Ω; T_{VJ} = 125°C non-repetitive	10	µs
P_{tot}	T_C = 25°C	100	W

Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
$V_{CE(sat)}$	I_C = 16 A; V_{GE} = 15 V; T_{VJ} = 25°C		1.8	2.1	V
	T_{VJ} = 125°C		2.1		V
$V_{GE(th)}$	I_C = 0.4 mA; V_{GE} = V_{CE}	5.5		6.5	V
I_{CES}	V_{CE} = V_{CES}; V_{GE} = 0 V; T_{VJ} = 25°C		0.01	0.1	mA
	T_{VJ} = 125°C		0.1		mA
I_{GES}	V_{CE} = 0 V; V_{GE} = ± 20 V			500	nA
$t_{d(on)}$	Inductive load, T_{VJ} = 125°C; V_{CE} = 600 V; I_C = 15 A; V_{GE} = ±15 V; R_G = 56 Ω		70		ns
t_r			40		ns
$t_{d(off)}$			250		ns
t_f			100		ns
E_{on}			1.55		mJ
E_{off}			1.7		mJ
Q_{Gon}	V_{CE} = 600 V; V_{GE} = 15 V; I_C = 15 A		47		nC
R_{thJC}	(per IGBT)			1.3	K/W
R_{thJH}	(per IGBT) with heatsink compound		tbd		K/W

Features

- Easy paralleling due to the positive temperature coefficient of the on-state voltage
- Rugged XPT design (Xtreme light Punch Through) results in:
  - short circuit rated for 10 µsec.
  - very low gate charge
  - square RBSOA @ 3x I_C
  - low EMI
- Thin wafer technology combined with the XPT design results in a competitive low $V_{CE(sat)}$
- Industry Standard Package
  - solderable pins for PCB mounting
  - isolated DCB ceramic base plate
- UL release applied

Applications

- AC drives
- power supplies with power factor correction

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- High power density
- Small and light weight

Caution: These devices are sensitive to electrostatic discharge. Users should observe proper ESD handling precautions.

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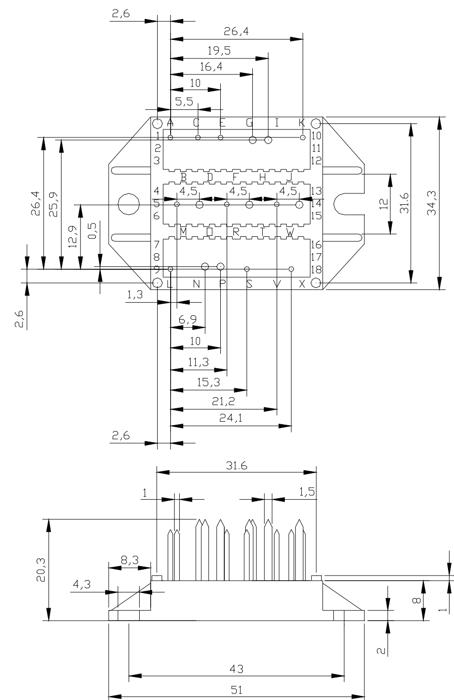
Diodes

Symbol	Conditions	Maximum Ratings	
I_{F25}	T_C = 25°C	33	A
I_{F80}	T_C = 80°C	22	A

Symbol	Conditions	Characteristic Values min.	typ.	max.	
V_F	I_F = 20 A; T_{VJ} = 25°C		1,8	2,2	V
	T_{VJ} = 150°C		2,2		V
I_{RM}	I_F = 20 A; di_F/dt = -750 A/µs; T_{VJ} = 125°C		tbd		A
t_{rr}	V_R = 600 V; V_{GE} = 0 V		tbd		ns
R_{thJC}	(per diode)			1,5	K/W
R_{thJH}	(per diode) with heatsink compound		tbd		K/W

Package style and outline
Dimensions in mm (1mm = 0.0394“)



Tolerances: +/- 0,3 mm

Component

Symbol	Conditions	Maximum Ratings	
T_{VJ}		-40...+150	°C
T_{stg}		-40...+125	°C
V_{ISOL}	I_{ISOL} ≤ 1 mA; 50/60 Hz; t = 1 s	3600	V~
M_d	Mounting torque (M4)	1.5 - 2.0	Nm
		14 - 18	lb.in.
a	Max. allowable acceleration	50	m/s²

Symbol	Conditions	Characteristic Values min.	typ.	max.	
d_S	Creepage distance on surface (Pin to heatsink)	11.2			mm
d_A	Strike distance in air (Pin to heatsink)	11.2			mm
Weight			24		g

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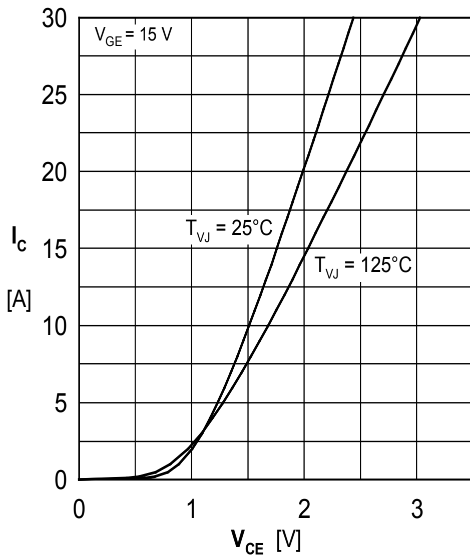

Fig. 1 Typ. output characteristics

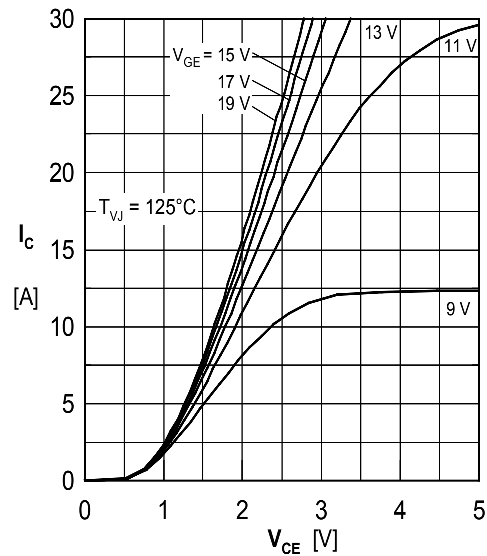

Fig. 2 Typ. output characteristics

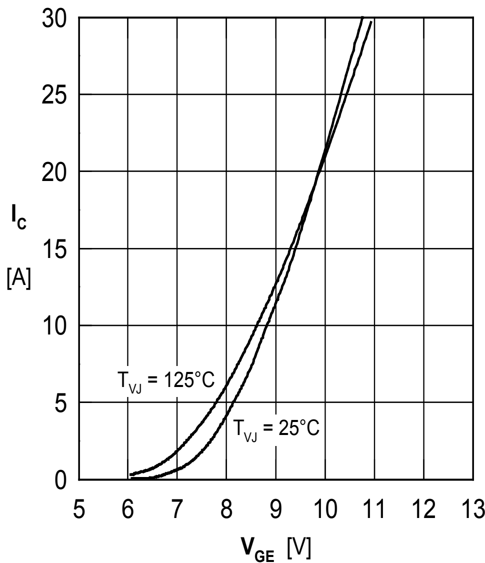

Fig. 3 Typ. tranfer characteristics

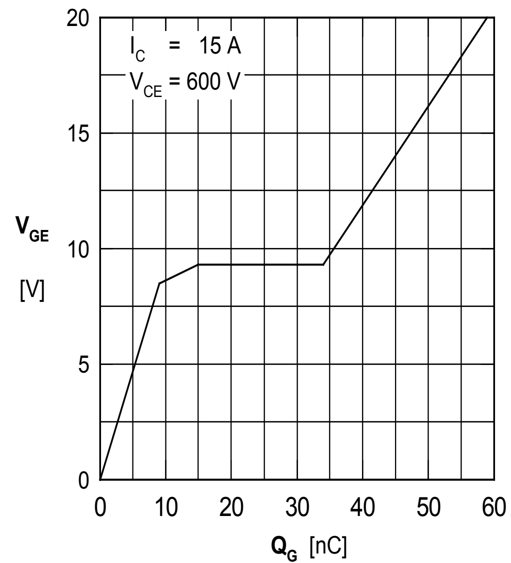

Fig. 4 Typ. turn-on gate charge

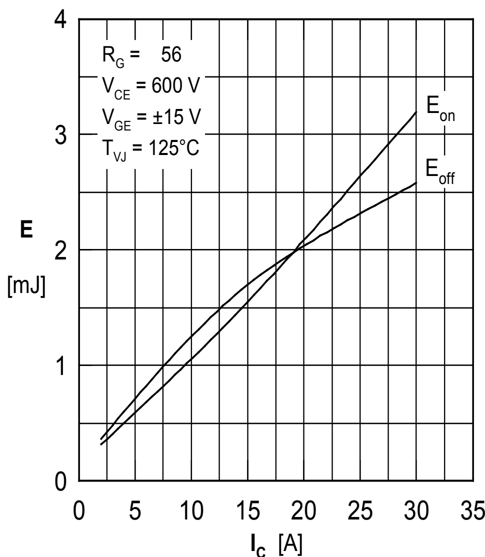

Fig. 5 Typ. switching energy vs. collector current

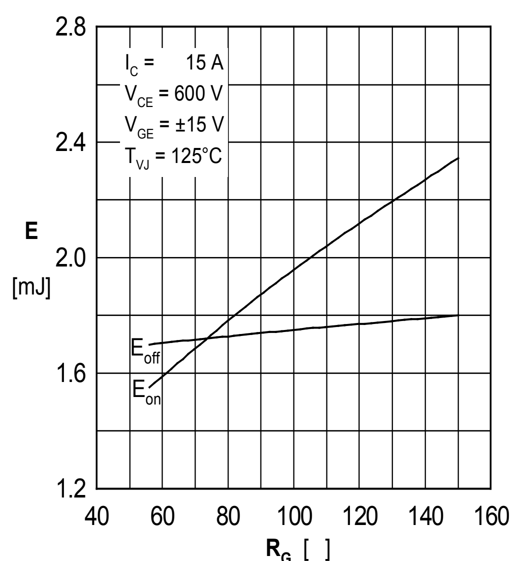

Fig. 6 Typ. switching energy vs. gate resistance

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