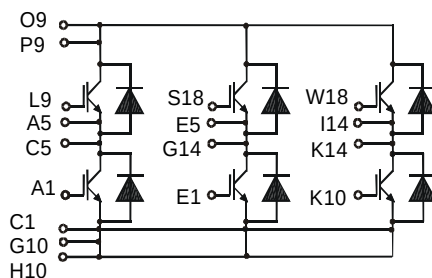


IGBT Module

PSIIX 20/12

Preliminary Data Sheet

$$\begin{aligned} I_{C25} &= 28 \text{ A} \\ V_{CES} &= 1200 \text{ V} \\ V_{CE(sat)typ.} &= 2.1 \text{ V} \end{aligned}$$



PSIIX 20/12

IGBTs

Symbol	Conditions	Maximum Ratings	
V_{CES}	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	1200	V
V_{GES}		± 20	V
I_{C25}	$T_C = 25^{\circ}\text{C}$	28	A
I_{C80}	$T_C = 80^{\circ}\text{C}$	17	A
I_{CM}	$V_{GE} = \pm 15 \text{ V}; R_G = 56 \Omega; T_{VJ} = 125^{\circ}\text{C}$	45	A
V_{CEK}	RBSOA, Clamped inductive load; $L = 100 \mu\text{H}$	V_{CES}	
t_{SC} (SCSOA)	$V_{CE} = 900 \text{ V}; V_{GE} = \pm 15 \text{ V}; R_G = 56 \Omega; T_{VJ} = 125^{\circ}\text{C}$ non-repetitive	10	μs
P_{tot}	$T_C = 25^{\circ}\text{C}$	100	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 μs
 - very low gate charge
 - square RBSOA @ $3 \times I_C$
 - 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

Symbol	Conditions	Characteristic Values ($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified)		
		min.	typ.	max.
$V_{CE(sat)}$	$I_C = 16 \text{ A}; V_{GE} = 15 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		1.8 2.1	2.1 V
$V_{GE(th)}$	$I_C = 0.4 \text{ mA}; V_{GE} = V_{CE}$	5.5		6.5 V
I_{CES}	$V_{CE} = V_{CES}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		0.01 0.1	0.1 mA
I_{GES}	$V_{CE} = 0 \text{ V}; V_{GE} = \pm 20 \text{ V}$			500 nA
$t_{d(on)}$	Inductive load, $T_{VJ} = 125^{\circ}\text{C}$ $V_{CE} = 600 \text{ V}; I_C = 15 \text{ A}$ $V_{GE} = \pm 15 \text{ V}; R_G = 56 \Omega$		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}	$V_{CE} = 600 \text{ V}; V_{GE} = 15 \text{ V}; I_C = 15 \text{ A}$		47	nC
R_{thJC}	(per IGBT)			1.3 K/W
R_{thJH}	(per IGBT) with heatsink compound		tbd	K/W

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.

Diodes

Symbol	Conditions	Maximum Ratings	
I_{F25}	$T_c = 25^{\circ}\text{C}$	33	A
I_{F80}	$T_c = 80^{\circ}\text{C}$	22	A

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

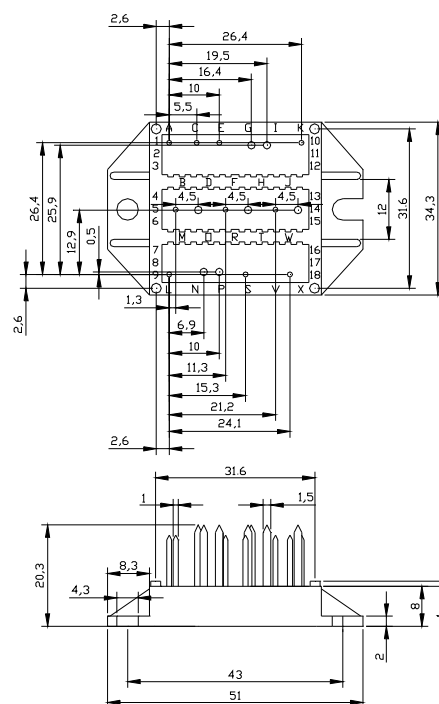
Component

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 14 - 18	Nm lb.in.
a	Max. allowable acceleration	50	m/s ²

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

Package style and outline

Dimensions in mm (1mm = 0.0394")



Tolerances: +/- 0,3 mm

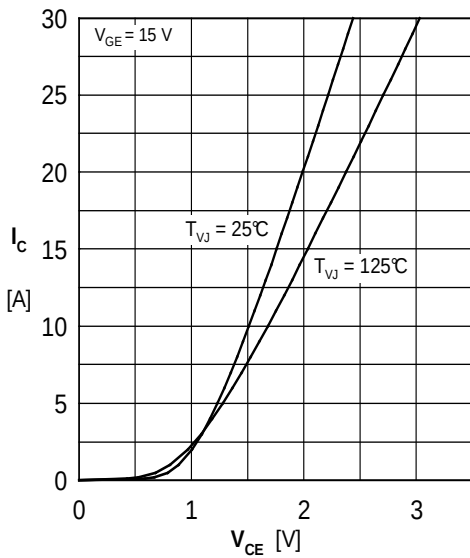


Fig. 1 Typ. output characteristics

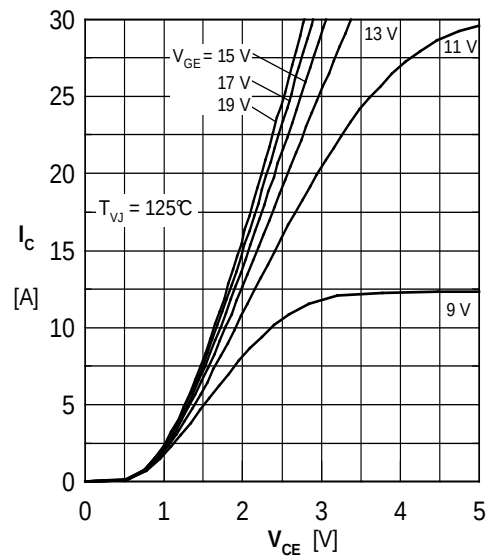


Fig. 2 Typ. output characteristics

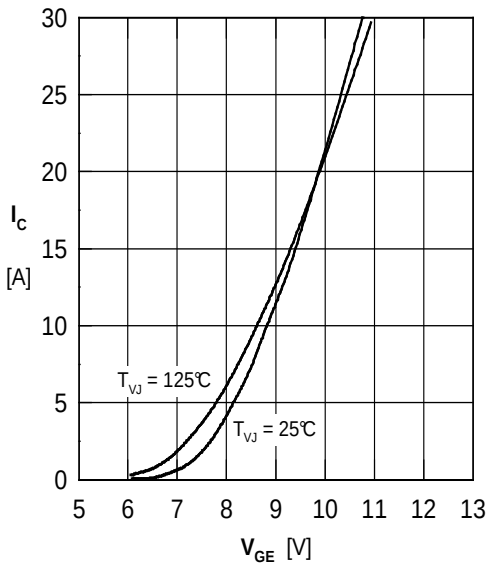


Fig. 3 Typ. transfer characteristics

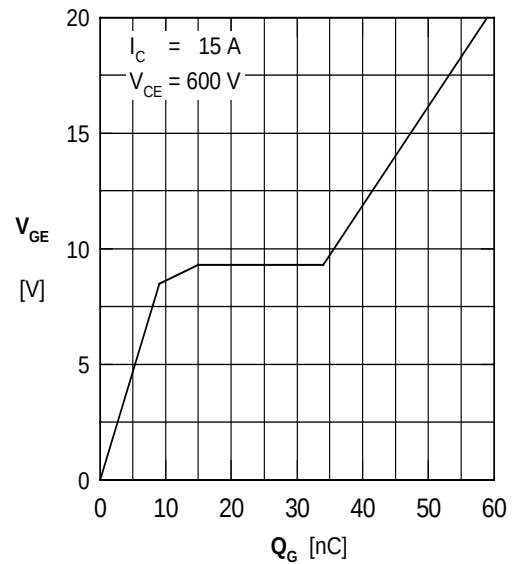


Fig. 4 Typ. turn-on gate charge

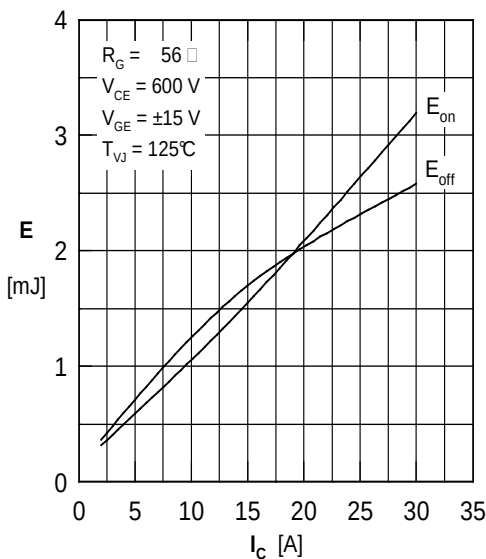


Fig. 5 Typ. switching energy vs. collector current

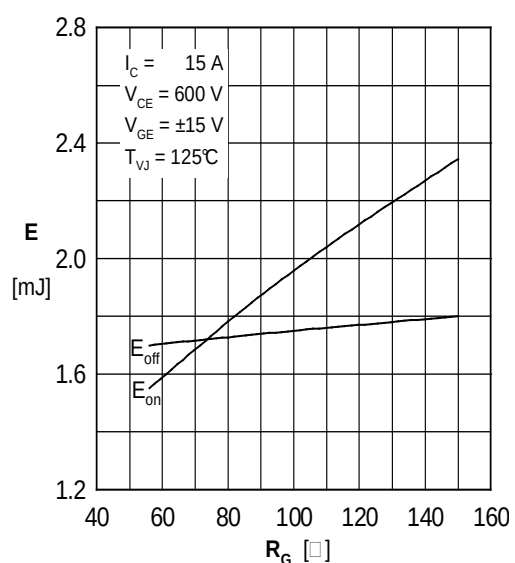


Fig. 6 Typ. switching energy vs. gate resistance