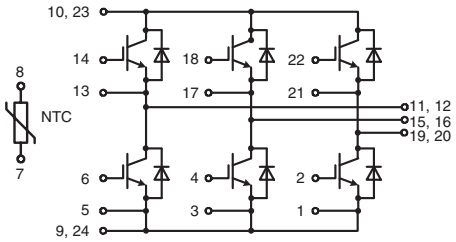
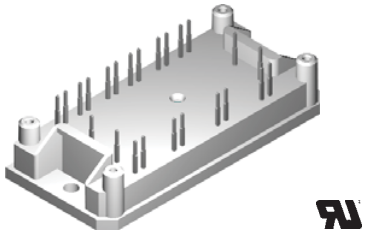
IGBT Module
Sixpack
Square RBSOA

I_{C25} = 60 A
V_{CES} = 600 V
$V_{CE(sat)\ typ.}$ = 2.3 V





IGBTs

Symbol	Conditions	Maximum Ratings	
V_{CES}	T_{VJ} = 25°C to 150°C	600	V
V_{GES}		± 20	V
I_{C25}	T_C = 25°C	60	A
I_{C80}	T_C = 80°C	41	A
I_{CM}	V_{GE} = ±15 V; R_G = 10 Ω; T_{VJ} = 125°C	80	A
V_{CEK}	RBSOA; clamped inductive load; L = 100 µH	V_{CES}	
P_{tot}	T_C = 25°C	180	W

Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
$V_{CE(sat)}$	I_C = 30 A; V_{GE} = 15 V; T_{VJ} = 25°C		2.3	2.8	V
	T_{VJ} = 125°C		2.0		V
$V_{GE(th)}$	I_C = 0.25 mA; V_{GE} = V_{CE}	3		5	V
I_{CES}	V_{CE} = V_{CES}; V_{GE} = 0 V; T_{VJ} = 25°C			0.2	mA
	T_{VJ} = 125°C		1.2		mA
I_{GES}	V_{CE} = 0 V; V_{GE} = ± 20 V			100	nA
$t_{d(on)}$	Inductive load, T_{VJ} = 125°C		20		ns
t_r	V_{CE} = 400 V; I_C = 30 A		20		ns
$t_{d(off)}$	V_{GE} = ±15 V; R_G = 3 Ω		130		ns
t_f			80		ns
E_{on}			0.6		mJ
E_{off}			0.5		mJ
C_{ies}	V_{CE} = 25 V; V_{GE} = 0 V; f = 1 MHz		2500		pF
Q_{Gon}	V_{CE} = 300 V; V_{GE} = 15 V; I_C = 30 A		95		nC
R_{thJC}	(per IGBT)			0.7	K/W
R_{thCH}			0.25		K/W

Features

- IGBTs
  - low saturation voltage
  - fast switching
  - short tail current for optimized performance also in resonant circuits
- HiPerFRED™ diode:
  - fast reverse recovery
  - low operating forward voltage
  - low leakage current
- Industry Standard Package
  - solderable pins for PCB mounting
  - isolated copper base plate
- UL registered E72873

Typical Applications

- AC drives

0540

Diodes

Symbol	Conditions	Maximum Ratings	
I_{F25}	T_C = 25°C	48	A
I_{F80}	T_C = 80°C	33	A

Symbol	Conditions	Characteristic Values min.	typ.	max.	
V_F	I_F = 30 A; V_{GE} = 0 V; T_{VJ} = 25°C		2.2	2.6	V
	T_{VJ} = 125°C		1.7		V
I_{RM}	I_F = 30 A; di_F/dt = -400 A/µs; T_{VJ} = 100°C		5		A
t_{rr}	V_R = 300 V; V_{GE} = 0 V		65		ns
R_{thJC}	(per Diode)			0.9	K/W
R_{thCH}			0.3		K/W

Temperature Sensor NTC

Symbol	Conditions	Characteristic Values min.	typ.	max.	
R_{25}	T = 25°C	4.45	4.7	5.0	kΩ
$B_{25/85}$			3510		K

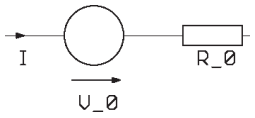
Module

Symbol	Conditions	Maximum Ratings	
T_{VJ}	operating	-40...+125	°C
T_{VJM}		-40...+150	°C
T_{stg}		-40...+125	°C
V_{ISOL}	I_{ISOL} ≤ 1 mA; 50/60 Hz	2500	V~
M_d	Mounting torque (M4)	2.0 - 2.2	Nm

Symbol	Conditions	Characteristic Values min.	typ.	max.	
d_S	Creepage distance on surface	12.7			mm
d_A	Strike distance in air	12.7			mm
Weight			40		g

Equivalent Circuits for Simulation

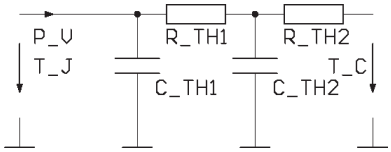
Conduction



IGBT (typ. at V_{GE} = 15 V; T_J = 125°C)
V_0 = 1.1 V; R_0 = 21.5 mΩ

Free Wheeling Diode (typ. at T_J = 125°C)
V_0 = 1.20 V; R_0 = 19 mΩ

Thermal Response



IGBT (typ.)
C_{th1} = tbd J/K; R_{th1} = tbd K/W
C_{th2} = tbd J/K; R_{th2} = tbd K/W

Free Wheeling Diode (typ.)
C_{th1} = tbd J/K; R_{th1} = tbd K/W
C_{th2} = tbd J/K; R_{th2} = tbd K/W

Dimensions in mm (1 mm = 0.0394")