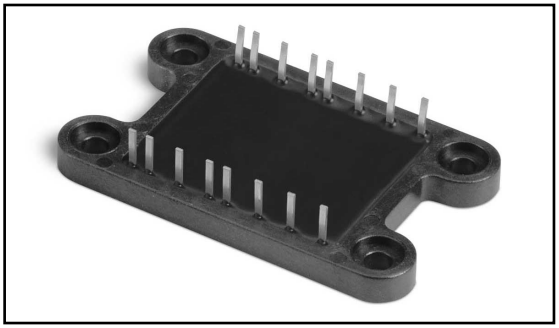
MODEL 7721 SERIES

H Bridge
Power Module

Drives DC motors, transformers and other loads. Paralleled ultrafast diodes included. Standard applications are off-line DC motor control and power conversion.

NEW PRODUCT



MODELS/RANGE

7721-1A	22A 500V IGBTs with 8A 600V ultrafast diodes
7721-2A	32A 600V IGBTs with 25A 600V hyperfast diodes

FEATURES AND BENEFITS

- Saves significant space and assembly time
- Modern design reduces heatsink cost
- Low cost
- Thin package (.200) easily fits between PCB and heatsink
- Internal temperature sensing for fastest possible response
- Replaces 8 each TO-220 or TO-247 discrete power semiconductors
- Custom designs accept any IGBTs or FETs up to size 5 with parallel diodes
- Custom module versions available for specific applications

  Example: 3 phase motor drives & rectifier bridges, power servo amplifiers, solenoid drivers, solid state relays, audio amplifiers, and high-power DC/DC converters.

Specifications subject to change without notice.

ELECTRICAL CHARACTERISTICS (7721-1A)

Parameter	Symbol	Conditions[1]	Min.	Typ.	Max.	Units
Q1-Q4 IGBT						
Continuous Collector Current	I_C	T_C = 25°C			40	A
		T_C = 100°C			22	A
Pulsed Collector Current	I_{CM}				80	A
Reverse Avalanche Energy	E_{AVR}				15	mJ
Collector Leakage Current	I_{CES}	V_{GE} = 0V, V_{CE} = 500V			250	µA
Saturation Voltage	$V_{CE(ON)}$	I_C = 22A, V_{GE} = 15V		2.4	3.0	V
		I_C = 40A, V_{GE} = 15V		2.8		V
Gate Threshold Voltage	$V_{GE(TH)}$	V_{CE} = V_{GE}, I_C = 250µA	3.0		5.5	V
Gate Leakage Current	I_{GES}	V_{GE} = ±20V			±100	nA
Total Gate Charge (turn on)	Q_g	I_C = 22A, V_{CC} = 400V,V_{GE} = 15V		55	83	nC
Gate Emitter Charge (turn on)	Q_{ge}	I_C = 22A, V_{CC} = 400V,V_{GE} = 15V		11	17	nC
Gate Collector Charge (turn on)	Q_{gc}	I_C = 22A, V_{CC} = 400V,V_{GE} = 15V		19	29	nC
Turn Off Delay Time	$td_{(off)}$	I_C = 22A, V_{CC} = 400V,V_{GE} = 15V,R_G = 10Ω w/tail		100	150	ns
Fall Time	tf	I_C = 22A, V_{CC} = 400V,V_{GE} = 15V,R_G = 10Ω w/tail		56	100	ns
Total Switching Loss	Ets	I_C = 22A, V_{CC} = 400V,V_{GE} = 15V,R_G = 10Ω w/tail		.55	.70	mJ
Input Capacitance	Cies	V_{GE} = 0V, V_{CC} = 30V, f = 1MHz		1400		pF
Output Capacitance	Coes	V_{GE} = 0V, V_{CC} = 30V, f = 1MHz		250		pF
Reverse Transfer Capacitance	Cres	V_{GE} = 0V, V_{CC} = 30V, f = 1MHz		42		pF
Junction Temperature	T_J				150	°C
Thermal Resistance	R_{thjc}				.94	°C/W
D1-D4 Fred Diodes						
Reverse Leakage Current	I_R	V_R = 600V			20	µA
		V_R = .8x600V, T_J = 125°C			1.5	mA
Forward Voltage	V_F	I_F = 8A			1.5	V
		I_F = 8A, T_J = 150°C			1.3	V
Reverse Recovery Time	trr	I_F = 1A, -di/dt = 50A/µs, V_R = 30V		35	50	ns
Junction Temperature	T_j				150	°C
Thermal Resistance	R_{thjc}				3.1	°C/W
TH1 NTC Thermistor						
Resistance	R_{25}	I = 1mA	22.5	25	27.5	KΩ
Resistance Ratio	R_T/R_{25}	t = 80°C		.126		
		t = 90°C		.0916		
		t = 100°C		.0679		
		t = 110°C		.0511		
Dissipation Constant	P_D			1.0		mW/°C
Thermal Time Constant	t				10	sec

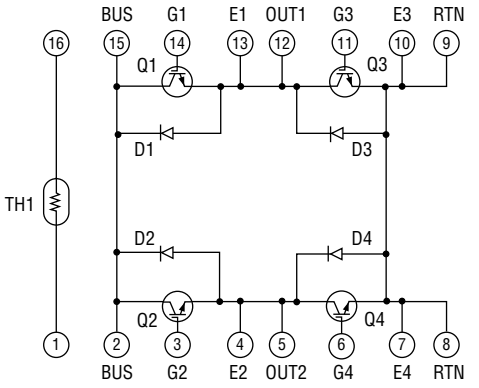
1 - TCase = 25°C unless otherwise specified.

ELECTRICAL CHARACTERISTICS (7721-2A)

Parameter	Symbol	Conditions[1]	Min.	Typ.	Max.	Units
Q1-Q4 IGBT						
Continuous Collector Current	I_C	T_C = 25°C			60	A
		T_C = 90°C			32	A
Pulsed Collector Current	I_{CM}				120	A
Collector Leakage Current	I_{CES}	V_{GE} = 0V, = .8x600V			200	µA
		V_{GE} = 0V, V_{CE} = .8x600V,T_J = 125°C			1	mA
Saturation Voltage	$V_{CE(ON)}$	I_C = 32A, V_{GE} = 15V			2.5	V
Gate Threshold Voltage	$V_{GE(TH)}$	V_{CE} = V_{GE}, I_C = 250µA	2.5		5.0	V
Gate Leakage Current	I_{GES}	V_{GE} = ±20V			±100	nA
Total Gate Charge (turn on)	Q_g	I_C = 32A, V_{CC} = 300V,V_{GE} = 15V		125	150	nC
Gate Emitter Charge (turn on)	Q_{ge}	I_C = 32A, V_{CC} = 300V,V_{GE} = 15V		23	35	nC
Gate Collector Charge (turn on)	Q_{gc}	I_C = 32A, V_{CC} = 300V,V_{GE} = 15V		50	75	nC
Turn Off Delay Time	$td_{(off)}$	I_C = 32A, V_{CC} = 400V,V_{GE} = 15V,R_G = 4.7Ω		100	200	ns
Fall Time	tf	I_C = 32A, V_{CC} = 400V,V_{GE} = 15V,R_G = 4.7Ω		80	150	ns
Total Switching Loss	Ets	I_C = 32A, V_{CC} = 400V,V_{GE} = 15V,R_G = 4.7Ω		.8	1.6	mJ
Input Capacitance	Cies	V_{GE} = 0V, V_{CC} = 25V, f = 1MHz		2500		pF
Output Capacitance	Coes	V_{GE} = 0V, V_{CC} = 25V, f = 1MHz		230		pF
Reverse Transfer Capacitance	Cres	V_{GE} = 0V, V_{CC} = 25V, f = 1MHz		70		pF
Junction Temperature	T_J				150	°C
Thermal Resistance	R_{thjc}				.60	°C/W
D1-D4 Fred Diodes						
Reverse Leakage Current	I_R	V_R = 600V		1	500	µA
		V_R = .600V, T_J =150°C		.3	1.5	mA
Forward Voltage	V_F	I_F = 25A		1.5	2.8	V
		I_F = 25A, T_J =150°C		1.3	2.5	V
Reverse Recovery Time	trr	I_F = 1A, -di/dt = 100A/µs		30	40	ns
Junction Temperature	T_j				175	°C
Thermal Resistance	R_{thjc}				1.2	°C/W
TH1 NTC Thermistor						
Resistance	R_{25}	I =1mA	22.5	25	27.5	KΩ
Resistance Ratio	R_T/R_{25}	t = 80°C		.126		
		t = 90°C		.0916		
		t = 100°C		.0679		
		t = 110°C		.0511		
Dissipation Constant	P_D			1.0		mW/°C
Thermal Time Constant	t				10	sec

1 - TCase = 25°C unless otherwise specified.

SCHEMATIC



ORDERING INFORMATION

77 2 1 -1A

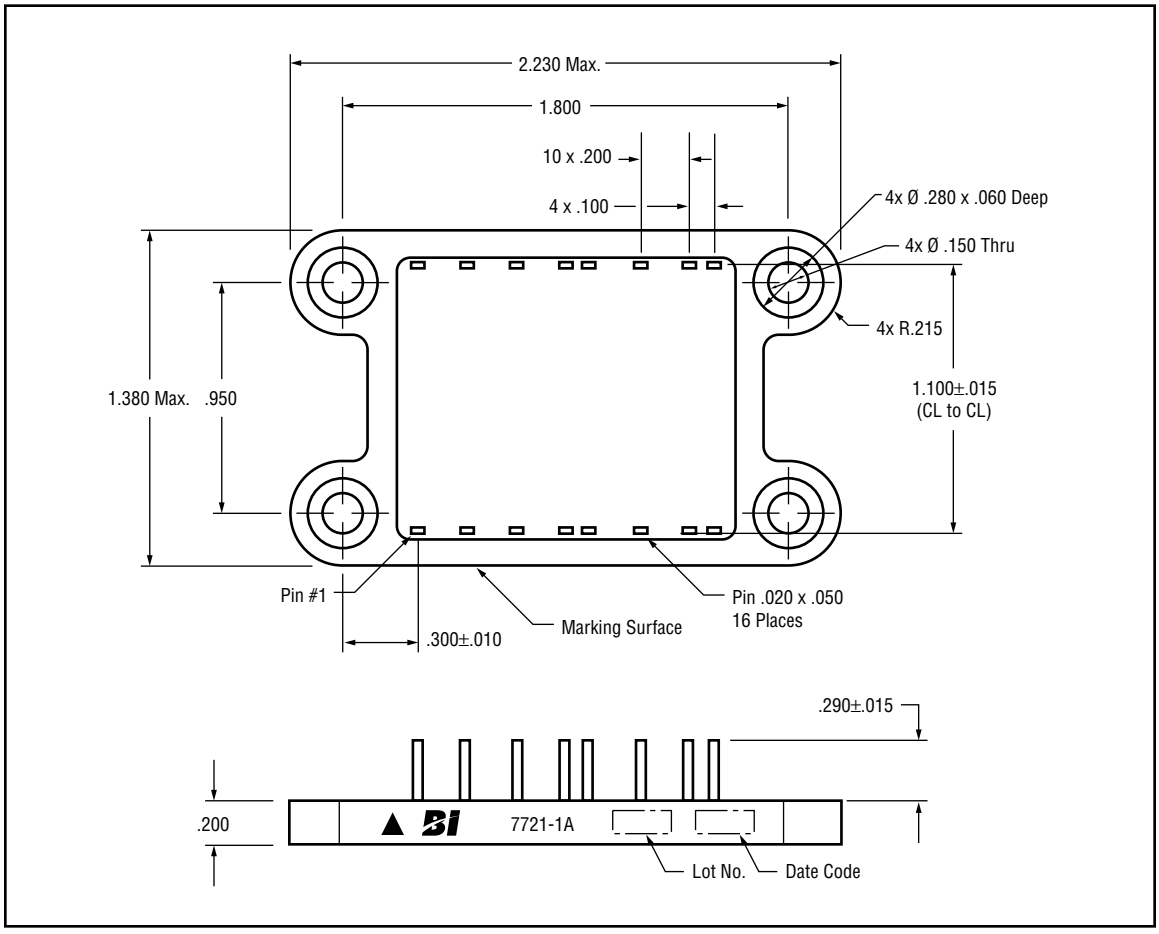
Model

Package Size

Power Level:
-1A = 500V, 22A, IGBT
-2A = 600V, 32A, IGBT

Circuit Function:
1 = H Bridge

OUTLINE DIMENSIONS (Inch)



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