


## INT-A-PAK Power Modules Ultrafast Diodes, 300 A



INT-A-PAK

### FEATURES

- Electrically insulated by DBC ceramic
- 3500 V<sub>RMS</sub> isolating voltage
- Standard JEDEC package
- Simplified mechanical designs, rapid assembly
- High surge capability
- Large creepage distances
- UL approved file E78996 
- Case style INT-A-PAK
- Compliant to RoHS directive 2002/95/EC
- Designed and qualified for industrial level


**RoHS**  
COMPLIANT

PRODUCT SUMMARY	
I <sub>F(AV)</sub> at T <sub>C</sub>	300 A at 48 °C
V <sub>R</sub>	600 V
t <sub>rr</sub> (typical)	130 ns
I <sub>F(DC)</sub> at T <sub>C</sub>	230 A at 100 °C

ABSOLUTE MAXIMUM RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Cathode to anode voltage	V <sub>R</sub>		600	V
Continuous forward current per leg	I <sub>F</sub>	T <sub>C</sub> = 25 °C	435	A
		T <sub>C</sub> = 100 °C	230	
Single pulse forward current	I <sub>FSM</sub>	Limited by junction temperature	TBD	
Maximum power dissipation per leg	P <sub>D</sub>	T <sub>C</sub> = 25 °C	781	W
		T <sub>C</sub> = 100 °C	313	
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>Stg</sub>		- 40 to 150	°C
RMS insulation voltage	V <sub>INS</sub>	50 Hz, circuit to base, all terminals shorted, t = 1 s	3500	V

ELECTRICAL SPECIFICATIONS (T <sub>J</sub> = 25 °C unless otherwise specified)						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Cathode to anode breakdown voltage	V <sub>BR</sub>	I <sub>R</sub> = 500 μA	600	-	-	V
Forward voltage drop per leg	V <sub>FM</sub>	I <sub>F</sub> = 150 A	-	1.23	1.53	
		I <sub>F</sub> = 300 A	-	1.43	1.96	
		I <sub>F</sub> = 150 A, T <sub>J</sub> = 125 °C	-	1.11	1.29	
		I <sub>F</sub> = 300 A, T <sub>J</sub> = 125 °C	-	1.39	1.73	
Maximum reverse leakage current	I <sub>RM</sub>	T <sub>J</sub> = 150 °C, V <sub>R</sub> = 600 V	-	-	50	mA

DYNAMIC RECOVERY CHARACTERISTICS (T <sub>J</sub> = 25 °C unless otherwise specified)							
PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNITS
Reverse recovery time	t <sub>rr</sub>	T <sub>J</sub> = 25 °C	I <sub>F</sub> = 50 A di/dt = 200 A/μs V <sub>R</sub> = 400 V (per leg)	-	130	165	ns
		T <sub>J</sub> = 125 °C		-	195	260	
Peak recovery current	I <sub>rr</sub>	T <sub>J</sub> = 25 °C		-	11	18	A
		T <sub>J</sub> = 125 °C		-	20	30	
Reverse recovery charge	Q <sub>rr</sub>	T <sub>J</sub> = 25 °C		-	670	1485	nC
		T <sub>J</sub> = 125 °C		-	1800	3900	
Peak rate of recovery current	di <sub>(rec)</sub> /dt	T <sub>J</sub> = 125 °C		-	-	400	A/μs
Softness factor per leg	s	I <sub>F</sub> = 50 A, T <sub>J</sub> = 25 °C, di/dt = 400 A/μs, V <sub>R</sub> = 200 V		-	0.2	-	
		I <sub>F</sub> = 50 A, T <sub>J</sub> = 125 °C, di/dt = 400 A/μs, V <sub>R</sub> = 200 V		-	0.22	-	

THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction operating and storage temperature range	T <sub>J</sub> , T <sub>Stg</sub>		- 40 to 150	°C
Maximum thermal resistance, junction to case per leg	R <sub>thJC</sub>	DC operation	0.16	K/W
Typical thermal resistance, case to heatsink	R <sub>thCS</sub>	Mounting surface, flat, smooth and greased	0.05	
Mounting torque ± 10 %		A mounting compound is recommended and the torque should be rechecked after a period of 3 hours to allow the spread of the compound.	4 to 6	Nm
to heatsink busbar				
Approximate weight			200	g
			7.1	oz.
Case style			INT-A-PAK	

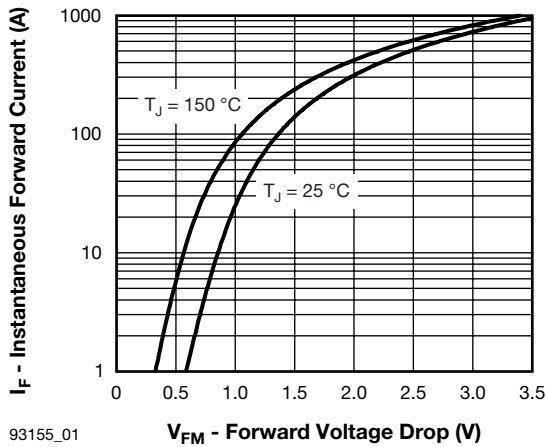


Fig. 1 - Maximum Forward Voltage Drop Characteristics

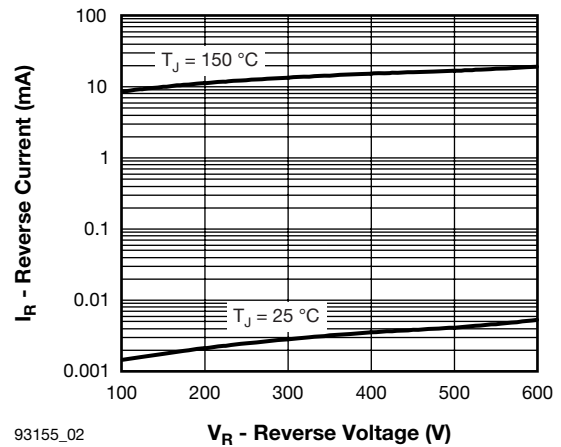


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

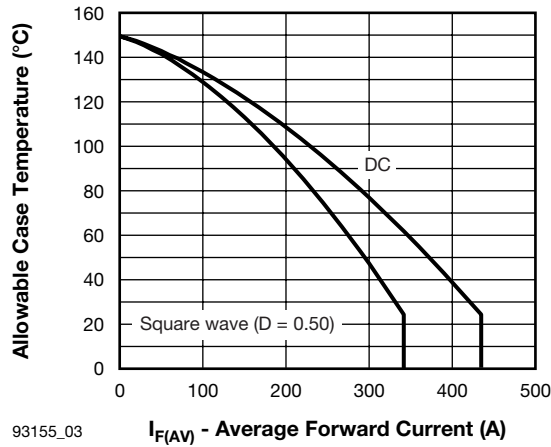
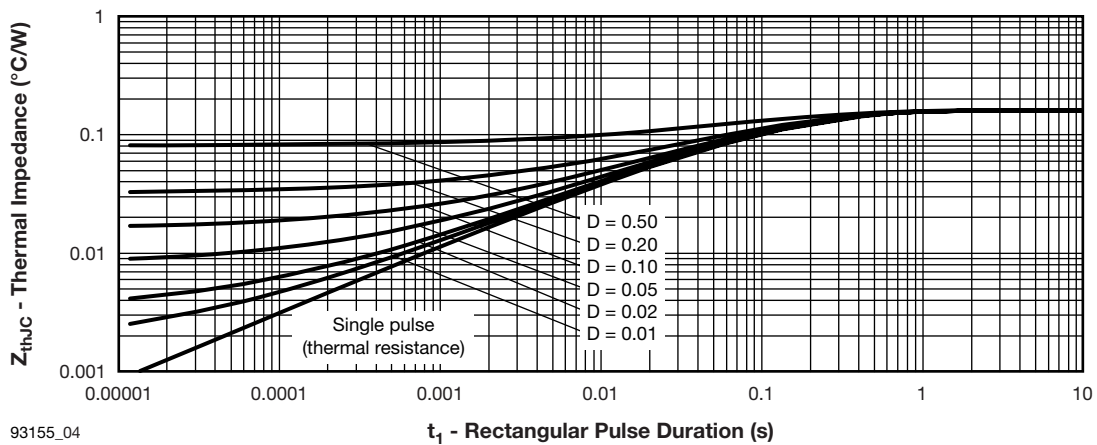


Fig. 3 - Maximum Allowable Case Temperature vs. Average Forward Current


 Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics

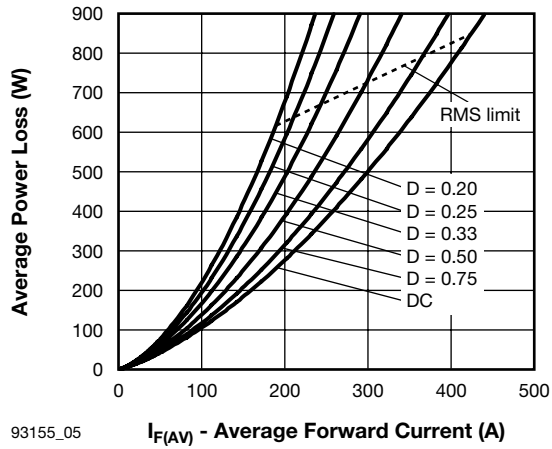


Fig. 5 - Forward Power Loss Characteristics

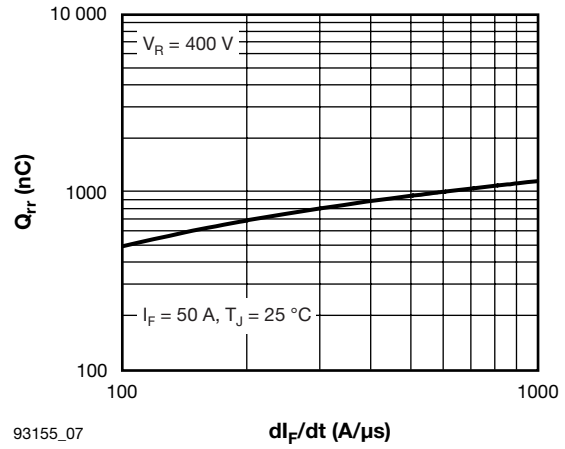


Fig. 7 - Typical Reverse Recovery Charge vs.  $di_F/dt$  (Per Leg)

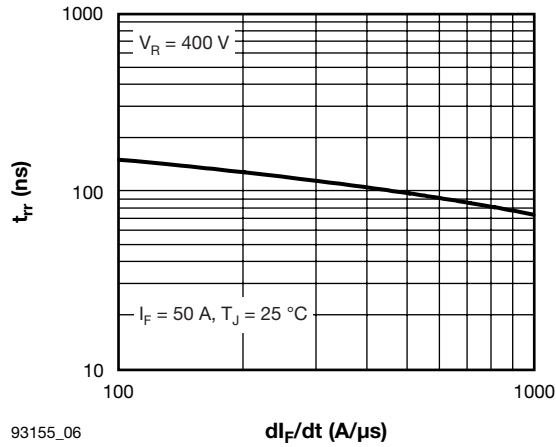


Fig. 6 - Typical Reverse Recovery Time vs.  $di_F/dt$  (Per Leg)

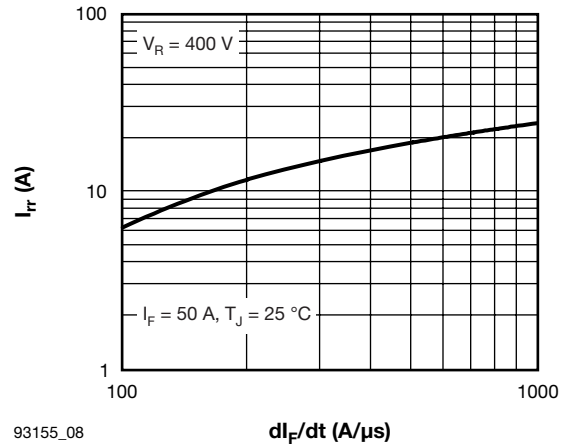
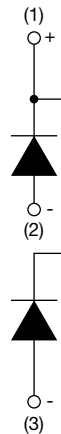


Fig. 8 - Typical Reverse Recovery Current vs.  $di_F/dt$  (Per Leg)

**ORDERING INFORMATION TABLE**

Device code	<b>VSK</b>	<b>C</b>	<b>U</b>	<b>300</b>	<b>/</b>	<b>06</b>	<b>PbF</b>
	①	②	③	④		⑤	⑥

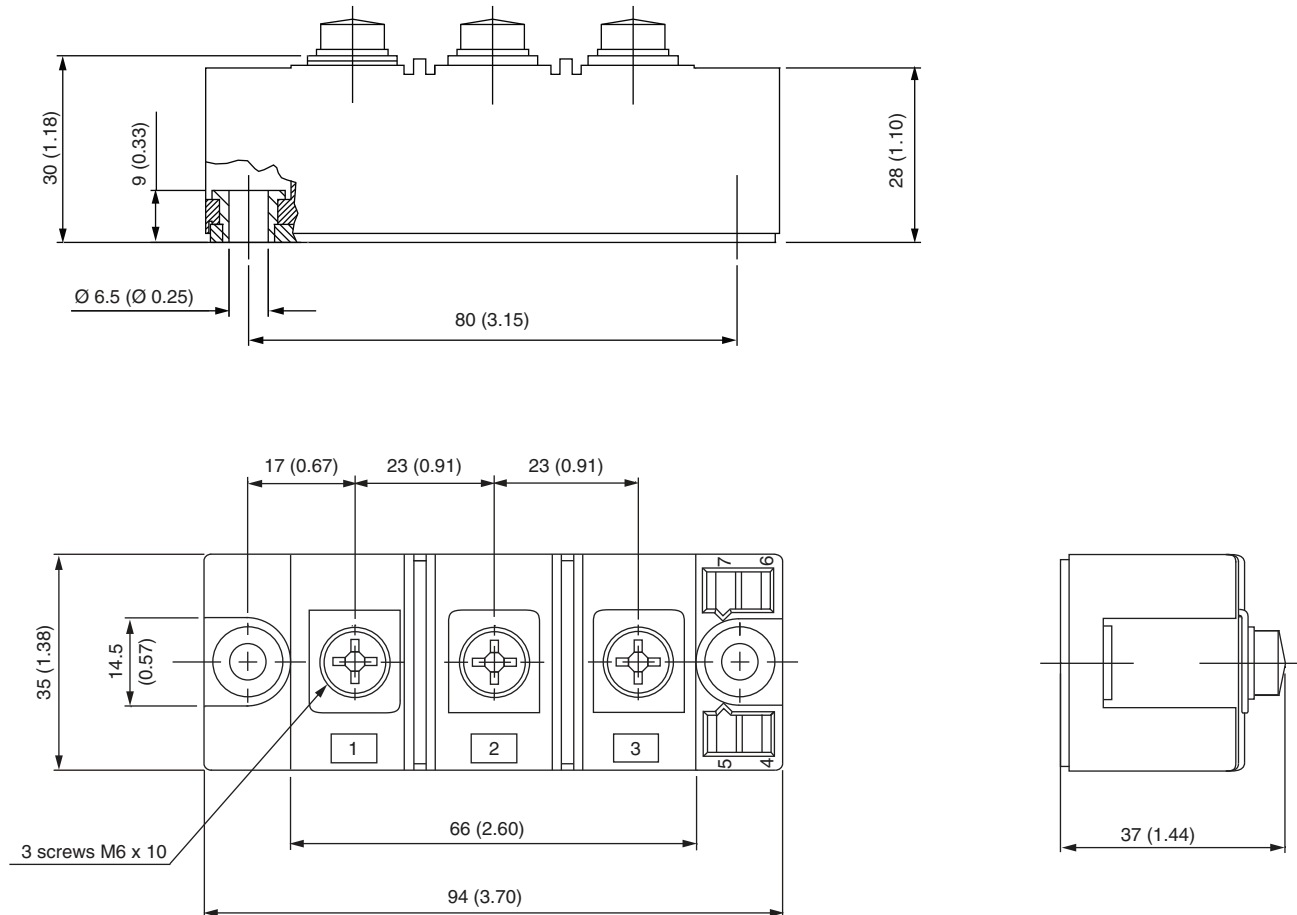
- 1** - Module type
- 2** - Circuit configuration:  
C = 2 diodes common cathode
- 3** - U = Ultrafast diode
- 4** - Current rating (300 = 300 A)
- 5** - Voltage rating (06 = 600 V)
- 6** - PbF = Lead (Pb)-free

**CIRCUIT CONFIGURATION**

**LINKS TO RELATED DOCUMENTS**

<b>LINKS TO RELATED DOCUMENTS</b>	
Dimensions	<a href="http://www.vishay.com/doc?95254">www.vishay.com/doc?95254</a>

## INT-A-PAK DBC

**DIMENSIONS** in millimeters (inches)





## Disclaimer

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