

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



INT-A-PAK

FEATURES

- Electrically insulated by DBC ceramic
- 3500 V_{RMS} 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 _{F(AV)} at T _C	300 A at 48 °C
V _R	600 V
t _{rr} (typical)	130 ns
I _{F(DC)} at T _C	230 A at 100 °C

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

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

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

THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction operating and storage temperature range	T _J , T _{Stg}		- 40 to 150	°C
Maximum thermal resistance, junction to case per leg	R _{thJC}	DC operation	0.16	K/W
Typical thermal resistance, case to heatsink	R _{thCS}	Mounting surface, flat, smooth and greased	0.05	
Mounting torque ± 10 % to heatsink busbar		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
Approximate weight			200	g
			7.1	oz.
Case style			INT-A-PAK	

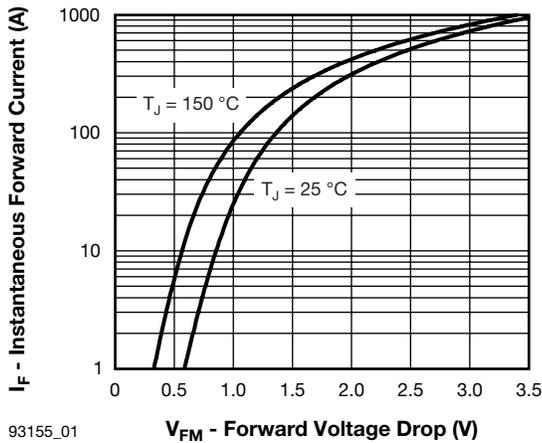


Fig. 1 - Maximum Forward Voltage Drop Characteristics

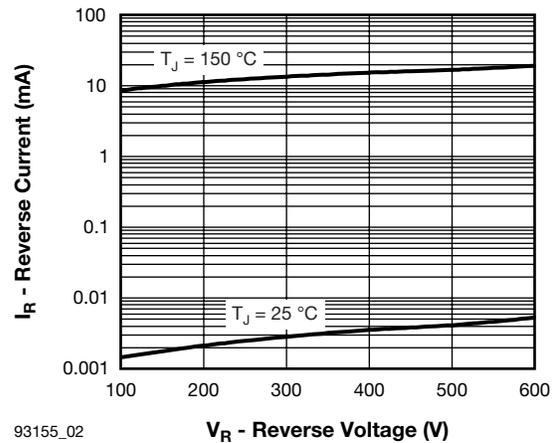


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

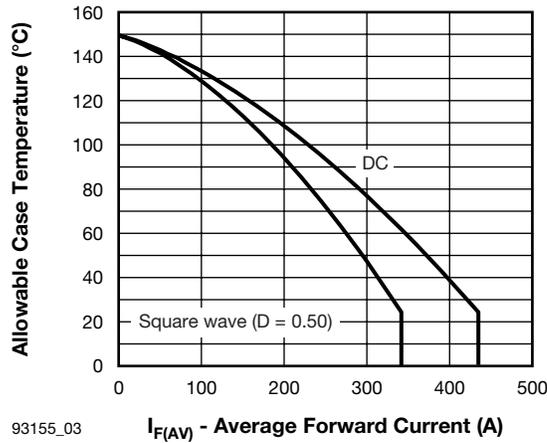
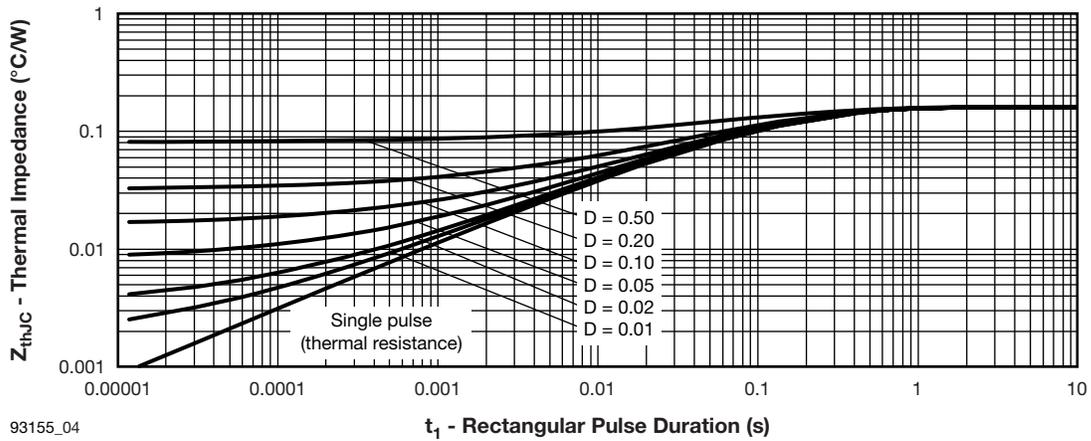


Fig. 3 - Maximum Allowable Case Temperature vs. Average Forward Current


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

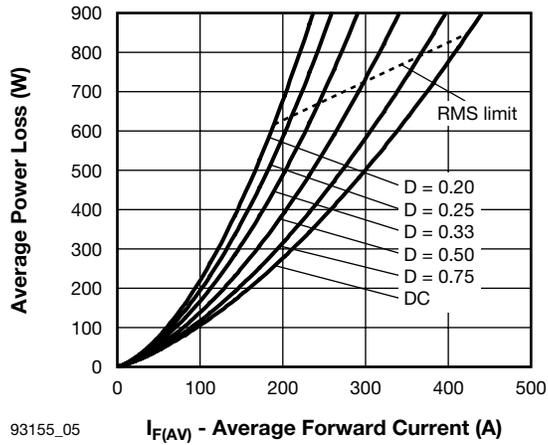


Fig. 5 - Forward Power Loss Characteristics

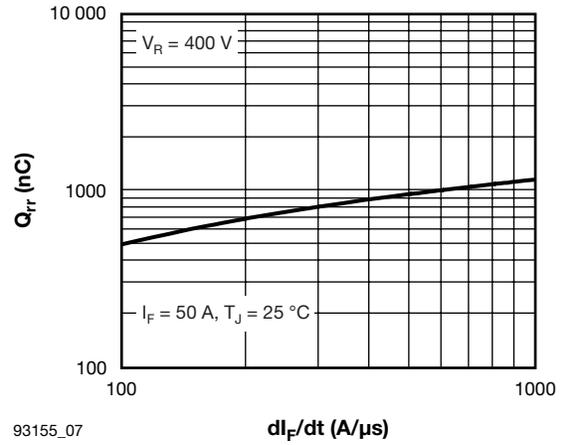


Fig. 7 - Typical Reverse Recovery Charge vs. di_F/dt (Per Leg)

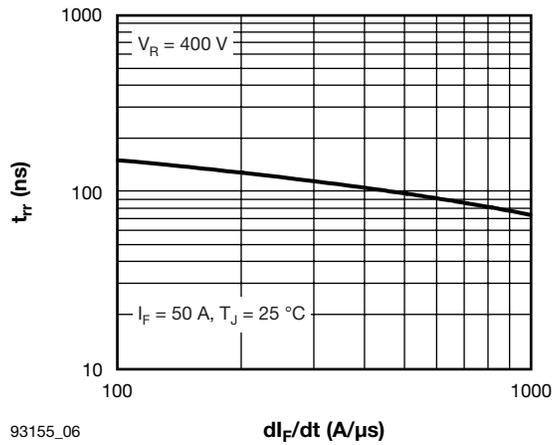


Fig. 6 - Typical Reverse Recovery Time vs. di_F/dt (Per Leg)

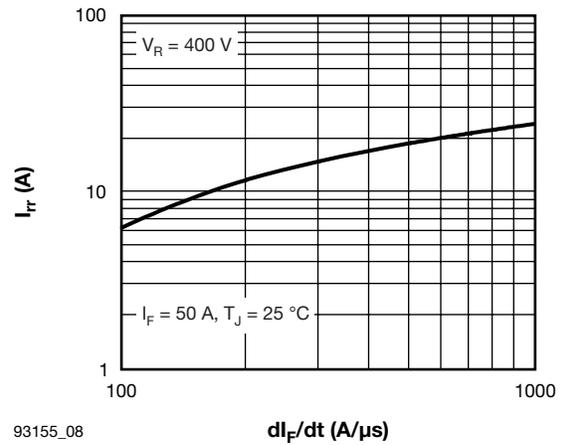
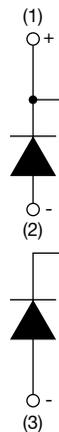


Fig. 8 - Typical Reverse Recovery Current vs. di_F/dt (Per Leg)

ORDERING INFORMATION TABLE

Device code	VSK	C	U	300	/	06	PbF
	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

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95254



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