

## 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 pending
- Case style INT-A-PAK
- Compliant to RoHS directive 2002/95/EC
- Designed and qualified for industrial level


**RoHS**  
COMPLIANT

### PRODUCT SUMMARY

$I_{F(AV)}$	300 A
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### MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV) \text{ rect}}$		300	A
	$T_C$	48	
$t_{rr}$		130	ns
$V_{RRM}$		600	V
$T_J, T_{Stg}$		- 40 to 150	°C

### ELECTRICAL SPECIFICATIONS

#### VOLTAGE RATINGS

TYPE NUMBER	VOLTAGE CODE	$V_{RRM}$ , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	$V_{RSM}$ , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V
VSKCU300/06	06	600	650

FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS	TYP.	MAX.	UNITS	
Maximum average forward current at $T_C$	$I_{F(AV)}$	Rectangular conduction, 50 % duty cycle	-	300	A	
			-	48	°C	
Forward voltage drop per leg	$V_{FM}$		$I_F = 150\text{ A}, T_J = 25\text{ °C}, t_p = 400\text{ }\mu\text{s}$ square wave	1.23	1.53	V
			$I_F = 300\text{ A}, T_J = 25\text{ °C}, t_p = 400\text{ }\mu\text{s}$ square wave	1.43	1.96	
			$I_F = 150\text{ A}, T_J = 125\text{ °C}, t_p = 400\text{ }\mu\text{s}$ square wave	1.11	1.29	
			$I_F = 300\text{ A}, T_J = 125\text{ °C}, t_p = 400\text{ }\mu\text{s}$ square wave	1.39	1.73	
Reverse recovery time	$t_{rr}$	$I_F = 50\text{ A}, T_J = 25\text{ °C}, -di/dt = 200\text{ A}/\mu\text{s}, V_R = 400\text{ V}$ (per leg)	130	165	ns	
Reverse recovery charge	$Q_{rr}$		670	1485	nC	
Reverse recovery current	$I_{REC}$		11	18	A	
Reverse recovery time	$t_{rr}$	$I_F = 50\text{ A}, T_J = 125\text{ °C}, -di/dt = 200\text{ A}/\mu\text{s}, V_R = 400\text{ V}$ (per leg)	195	260	ns	
Reverse recovery charge	$Q_{rr}$		1800	3900	nC	
Reverse recovery current	$I_{REC}$		20	30	A	
Maximum forward voltage drop	$di_{(rec)M}/dt$		-	400	A/ $\mu\text{s}$	
Softness factor per leg	s	$I_F = 50\text{ A}, T_J = 25\text{ °C}, -di/dt = 400\text{ A}/\mu\text{s}, V_R = 200\text{ V}$	0.2	-		
			$I_F = 50\text{ A}, T_J = 125\text{ °C}, -di/dt = 400\text{ A}/\mu\text{s}, V_R = 200\text{ V}$	0.22	-	

BLOCKING				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum peak reverse leakage current per leg	$I_{RRM}$	$T_J = 150\text{ °C}$	50	mA
RMS insulation voltage	$V_{INS}$	50 Hz, circuit to base, all terminals shorted, $t = 1\text{ s}$	3500	V

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 $\pm 10\%$		A mounting compound is recommended and the torque should be rechecked after a period of 3 h to allow the spread of the compound.	4 to 6	Nm
Approximate weight			200	g
			7.1	oz.
Case style			INT-A-PAK	

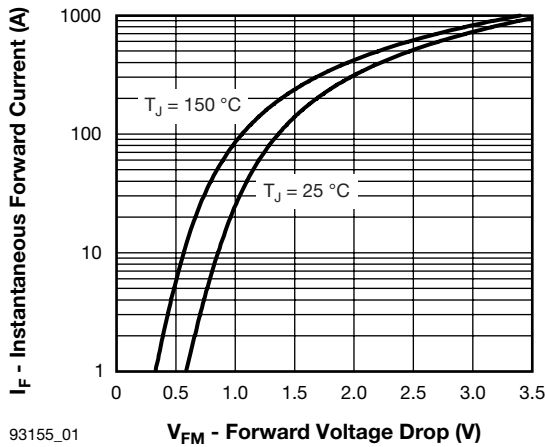


Fig. 1 - Maximum Forward Voltage Drop Characteristics

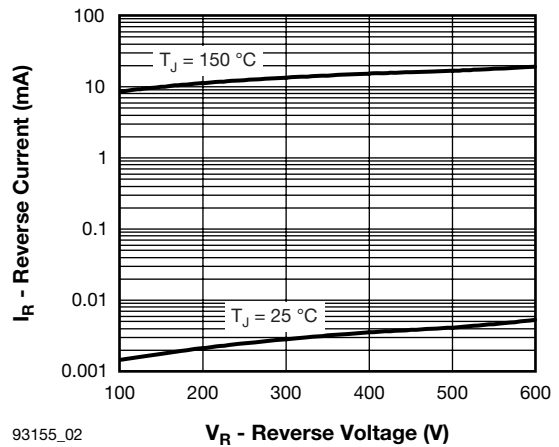


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

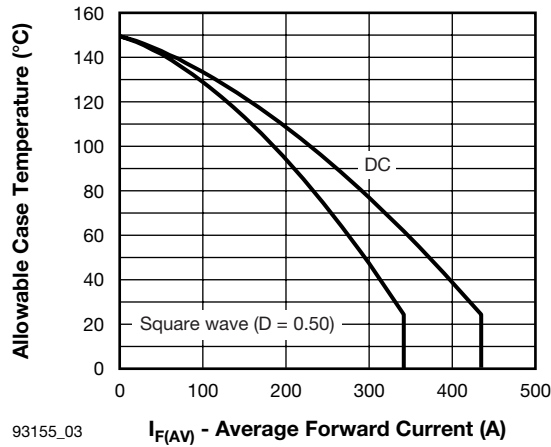


Fig. 3 - Maximum Allowable Case Temperature vs. Average Forward Current

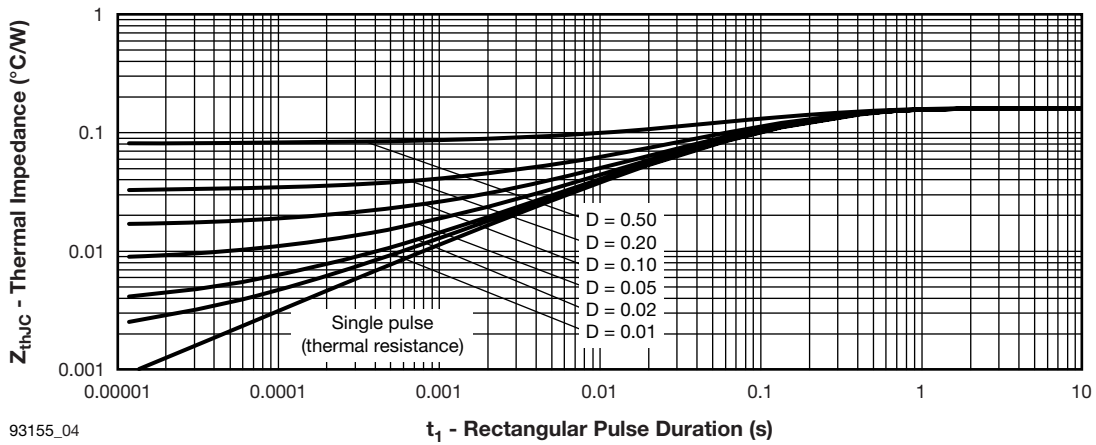
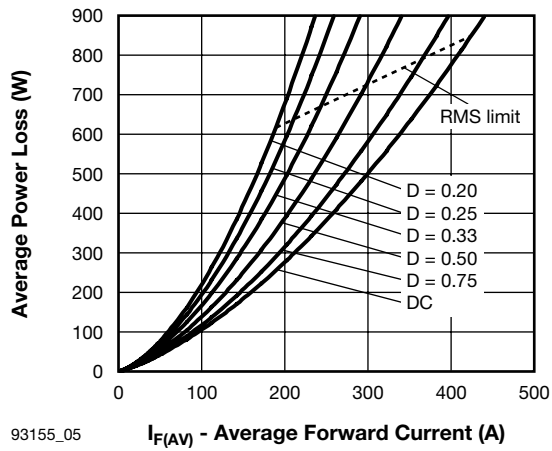
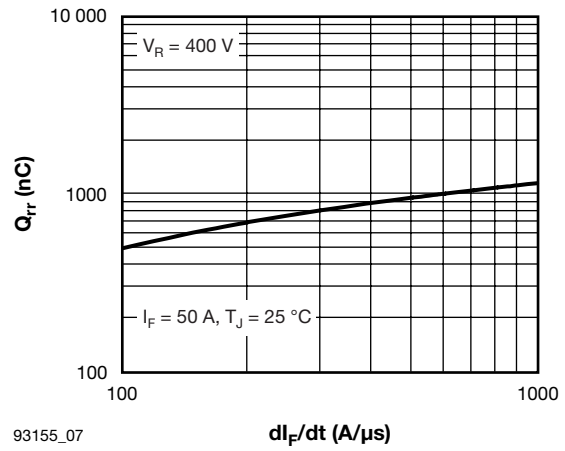


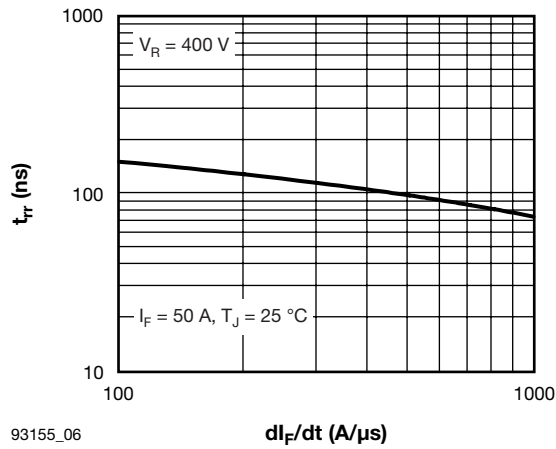
Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics



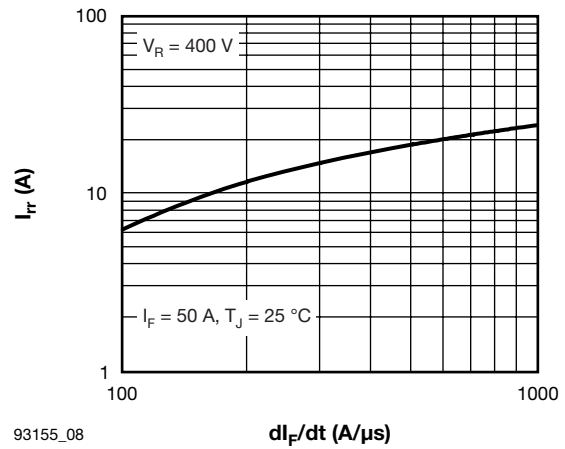
**$I_{F(AV)}$  - Average Forward Current (A)**  
Fig. 5 - Forward Power Loss Characteristics



**$di_F/dt$  (A/ $\mu$ s)**  
Fig. 7 - Typical Reverse Recovery Charge vs.  $di_F/dt$  (Per Leg)



**$di_F/dt$  (A/ $\mu$ s)**  
Fig. 6 - Typical Reverse Recovery Time vs.  $di_F/dt$  (Per Leg)



**$di_F/dt$  (A/ $\mu$ s)**  
Fig. 8 - Typical Reverse Recovery Current vs.  $di_F/dt$  (Per Leg)

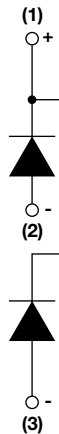


## ORDERING INFORMATION TABLE

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
- 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	
Dimensions	<a href="http://www.vishay.com/doc?95254">www.vishay.com/doc?95254</a>



## Disclaimer

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