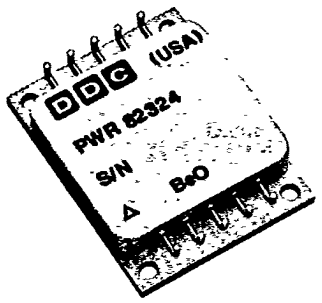
DDC
ILC DATA DEVICE CORPORATION

PWR-82324 SERIES

HIGH CURRENT H-BRIDGE WITH FLYBACK DIODES

T-23-07



NEW

FEATURES

- *SMALL SIZE*
- *HIGH CURRENT CAPABILITY*
- *VERY LOW ON-RESISTANCE*
- *HIGH EFFICIENCY*
- *$\theta_{j\text{-}c}$<0.85°C/W*
- *FULL COMPLIANCE TO MIL-STD-883C (OPTIONAL)*

DESCRIPTION

The PWR-82324 Series are H-bridge Power Hybrids featuring up to 12A output current and low channel "ON" resistance. Each hybrid contains two N-channel and two P-channel power MOSFETS connected into full H-bridge configuration and shunted by antiparallel fast recovery diodes. The PWR-82324 series is manufactured in accordance with MIL-M-38510 and MIL-STD-883C.

High thermal conductivity materials are used to ensure low junction to case thermal resistance $\theta_{j\text{-}c}$<0.85°C/W. Other features include high blocking voltage up to 200 volts, high switching frequency, and shunt power diodes to clamp inductive flyback. Packaged in a small case, the PWR-82324 series is an excellent choice for high power, high frequency inverters and motor drives in missiles and avionics equipment applications.

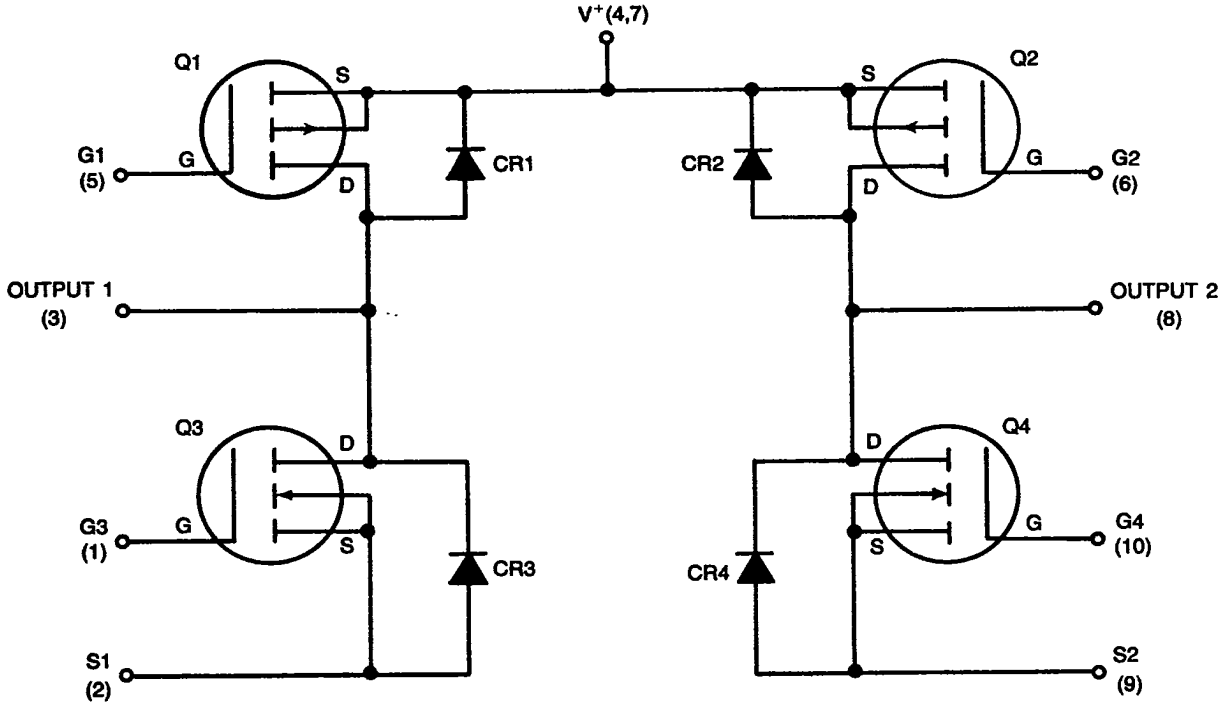


FIGURE 1. PWR-82324 SERIES SCHEMATIC

TABLE 1. PWR-82324 SERIES SPECIFICATIONS (At T_{case} = +25°C unless otherwise noted)

PARAMETER		SYMBOL	UNITS	PWR-82324		PWR-82325		TEST CONDITIONS
				MIN	MAX	MIN	MAX	
MOSFET TRANSISTORS[1]								
Maximum Gate-Source Voltage		V_{GS}	V		±20		±20	
Maximum Continuous Drain Current		I_D	A		12		7	T_{case} = 100°C
Drain-Source Breakdown Voltage[2]		BV_{DSS}	V	100		200		V_{GS} = 0V, I_D = 1mA
Gate Threshold Voltage		$V_{GS(th)}$	V	2	4	2	4	$V_{DS} \geq V_{GS}$, I_D = 1mA
Gate-Source Leakage Current		I_{GSS}	nA		±500		±500	V_{GS} = ±20V
Zero Gate Voltage Drain Current		I_{DSS}	μA		250		250	V_{DS} = Max. Rating, V_{GS} = 0V
			μA		1000		1000	V_{DS} = Max. Rating x 0.8, V_{GS} = 0V, T_c = +125°C
Static Drain-Source On-State Resistance[3]	N-CH	$R_{DS(on)}$	Ω		0.1			V_{GS} = 10V, I_D = 12A
	P-CH				0.2			
	N-CH						0.18	V_{GS} = 10V, I_D = 7A
	P-CH						0.6	
Input Capacitance	N-CH	C_{iss}	pF		1600		1600	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz
	P-CH				1300		1300	
Output Capacitance	N-CH	C_{oss}	pF		800		750	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz
	P-CH				700		450	
Turn-On Delay Time		$t_{d(on)}$	ns		30		30	V_{DD} = 24V, I_D = 10A, Z_0 = 4.7Ω
Rise Time	N-CH	t_r	ns		60		60	
	P-CH				15		15	
Turn-Off Delay Time	N-CH	$t_{d(off)}$	ns		80		80	
	P-CH				20		20	
Fall Time	N-CH	t_f	ns		30		60	
	P-CH				12		12	
DIODES[1]								
Repetitive Peak Reverse Voltage		V_{RR}	V		100		200	
Average DC Current		I_O	A		12		7	T_c = +100°C
Reverse Leakage Current		I_R	μA		10		10	T_j = +25°C
			mA		1.0		1.0	T_j = +125°C
Instantaneous Forward Voltage Drop[3]		V_F	V		0.9			I_{peak} = 12A
			V				0.8	I_{peak} = 7A
Reverse Recovery Time		t_{rr}	ns		50		50	I_F = 1A, I_R = 1A
THERMAL								
Thermal Resistance Junction to Case		$R\theta_{j-c}$	°C/W		0.85		0.85	
Maximum Temperature For Lead Soldering		T_S	°C		250		250	1/8" from case for 5 seconds.
Maximum Junction Temperature Range		T_j	°C	−55 to +150		−55 to +150		
Maximum Case Temperature Range								
Operating		T_{co}	°C	−55 to +125		−55 to +125		
Storage		T_{cs}	°C	−55 to +150		−55 to +150		

Notes:
1. Data applies to each separate die. 2. T_j = +25°C to +150°C. 3. Pulse Test: Pulse Width < 300μs, Duty Cycle ≤ 2%.

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TABLE 2. PWR-82324 PIN FUNCTIONS			
PIN	FUNCTION	PIN	FUNCTION
1	G3	6	G2
2	S1	7	V+
3	OUTPUT 1	8	OUTPUT 2
4	V+	9	S2
5	G1	10	G4

ORDERING INFORMATION

PWR-8232X – 1 1 0

Reliability Grade:

0 = Standard DDC procedures.

1 = Fully compliant with MIL-STD-883.

2 = Screened to MIL-STD-883 but without QCI testing.

Configuration

4 = 100V N/P-Channel H-Bridge

5 = 200V N/P-Channel H-Bridge

Dimensions in inches (mm)

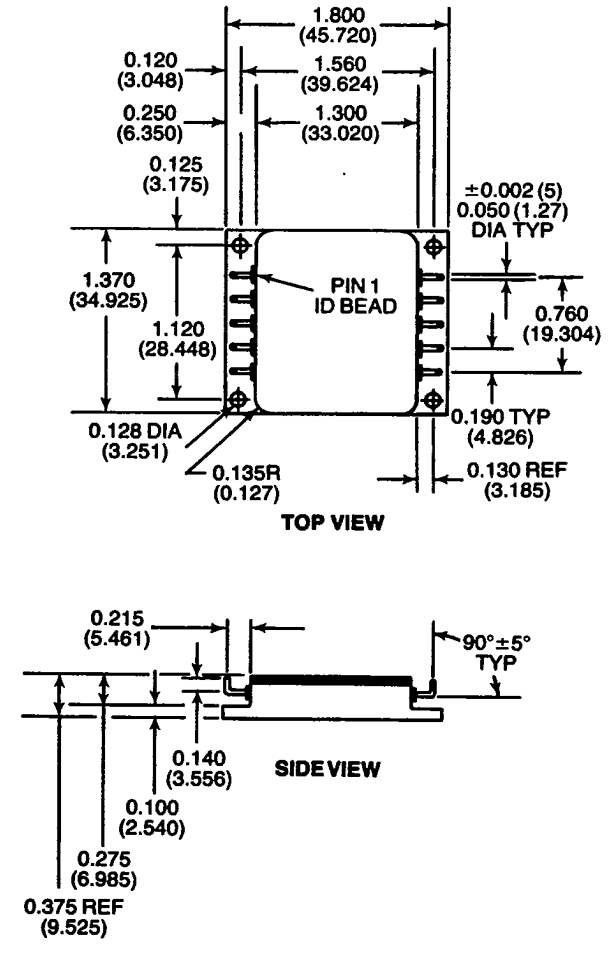

FIGURE 2. PWR-82324 SERIES MECHANICAL OUTLINE

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