

**DESCRIPTION**

The MT7237 emulates a 5A very low forward voltage diode that used in high current diode and diode-OR applications. The MT7237 integrates a 35mohm N-Channel MOSFET to obtain higher efficiency and smaller board area to replace a Schottky diode. MT7237 detects the forward voltage drop across the MOSFET to ensure the current transfer from one path to the other path smoothly, so it is easily used in the multiple power supplies OR applications that can effectively increase total system reliability. When the input supply fails or is shorted to ground, a fast circuitry can turn off the MOSFET immediately to reduce the reverse current.

MT7237 is available in low profile 8 lead DFN 2mmx3mm package.

**FEATURES**

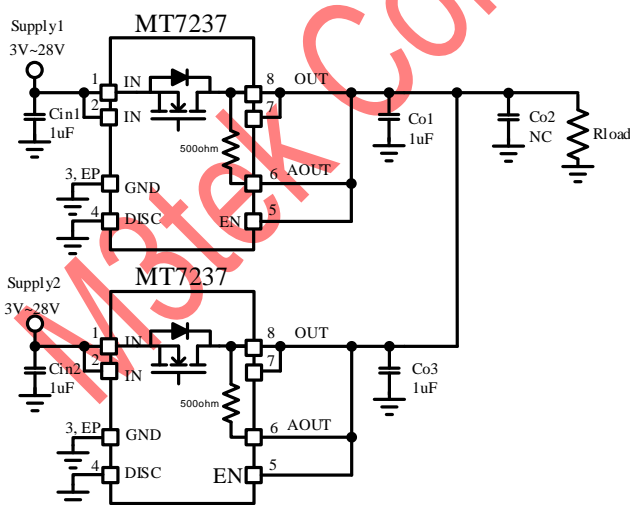
- Wide Input Range from 3V to 28V
- Replace a Power Schottky diode with an Integrated 35mΩ N-Channel MOSFET
- Fast Turn-off Limits Reverse Current
- Smooth Current Transfer from One Power to the Other Power
- Input Supply Rail Discharging Function
- Available in 8 lead 2mmX3mm DFN Packages

**APPLICATION**

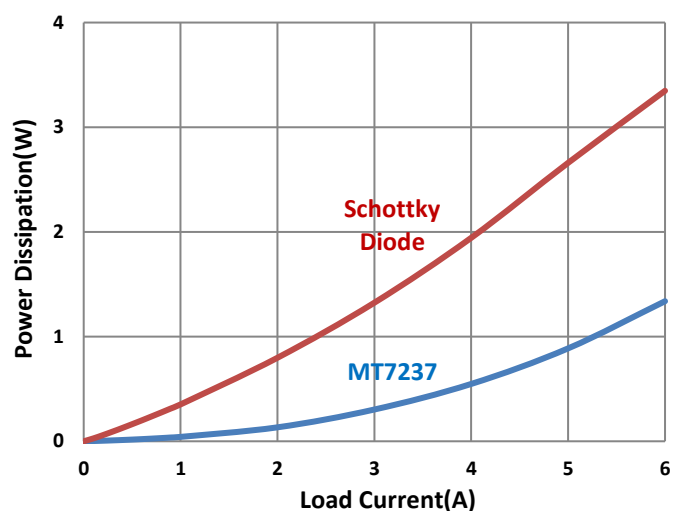
- USB Type-C/ PD Ports
- N+1 Redundant Power Supplies
- Telecom Infrastructure
- Automotive Systems

**TYPICAL APPLICATION**

**3V~28V 5A Diode OR Circuit**



**Power Dissipation Vs Load Current**

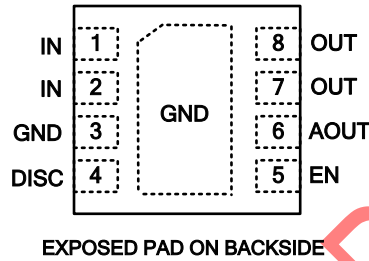


**Ordering Information**

Part No.	Marking	Temp. Range	Package	MOQ
MT7237NDFR	7237 YWxx	-40°C ~+85°C	DFN2X3_8L	3000/Tape & Reel

Note: Y: Year, W: Week, xx: Manufacture Code

**Pin Configuration**

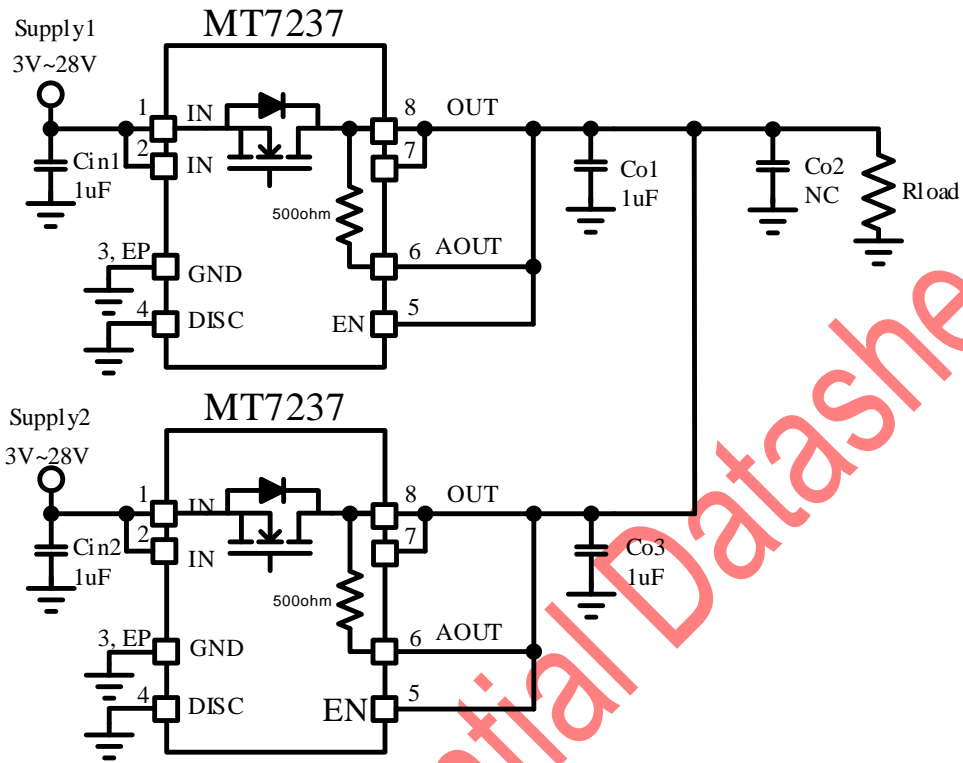


**MT7237 TOP VIEW**

**Pin Description**

PIN NO	PIN NAME	DESCRIPTION
1, 2	IN	Input voltage. Source of the internal N-channel MOSFET.
3	GND	Ground pin.
4	DISC	Input Discharge control input pin. Set DISC pin logic Hi to discharge input through an internal 50ohm resistor to ground. Set DISC pin logic Lo to disable input discharge.
5	EN	Internal N-channel MOSFET Enable pin. EN has accurate ON/OFF threshold of 1.2V and 1.0V respectively. Pull it above ON threshold to enable the MOSFET. Pull it below OFF threshold to disable the MOSFET, and the MT7237 only draws 3uA from the AOUT pin. The MOSFET body diode (IN: Anode; OUT: Cathode) can still conduct current when EN pin is pull below OFF threshold. To enable MOSFET all the time, connect EN pin to AOUT pin.
6	AOUT	Supply of the internal circuit. Either connect this pin to OUT directly or bypass this pin to GND with a 1uF ceramic capacitor to form a RC hold-up circuit.
7, 8	OUT	Output voltage. Drain of the internal N-channel MOSFET.

MT7237 Application Schematic



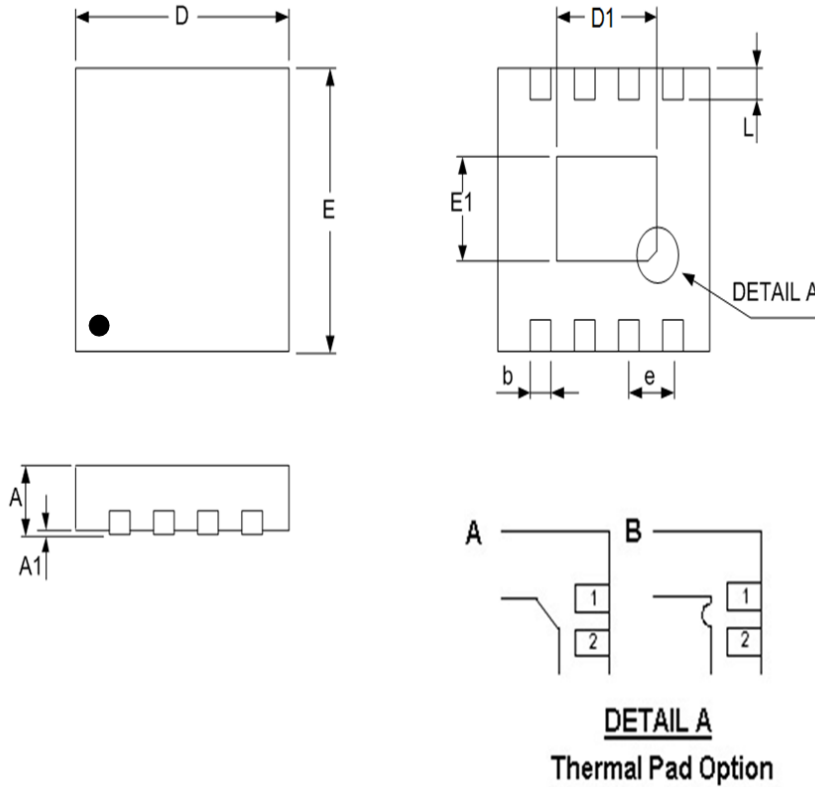
EVB BOM List

Qty	Ref	Value	Description	Package
2	CIN1, CIN2	1 $\mu$ F	Ceramic Capacitor, 35V, X5R	0603
2	CO1, CO3	1 $\mu$ F	Ceramic Capacitor, 35V, X5R	0603
1	CO2	NC		
1	RLOAD	-	System Loading	-
2	U1, U2	MT7237	Very Low Forward Voltage Diode IC	DFN2x3_8L

**Package Information**

**DFN2x3\_8L Outline Dimensions**

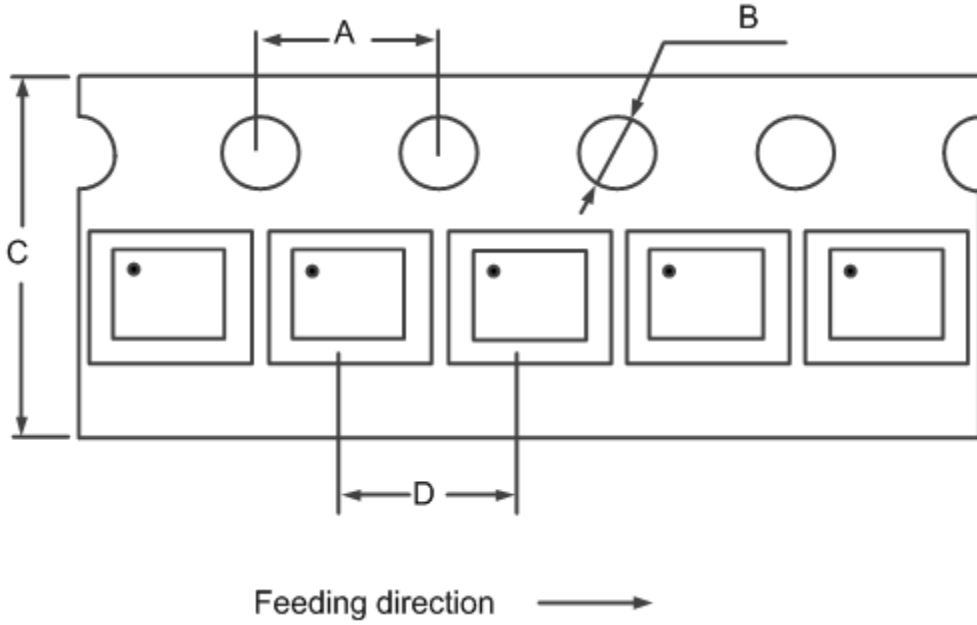
Unit: inches/mm



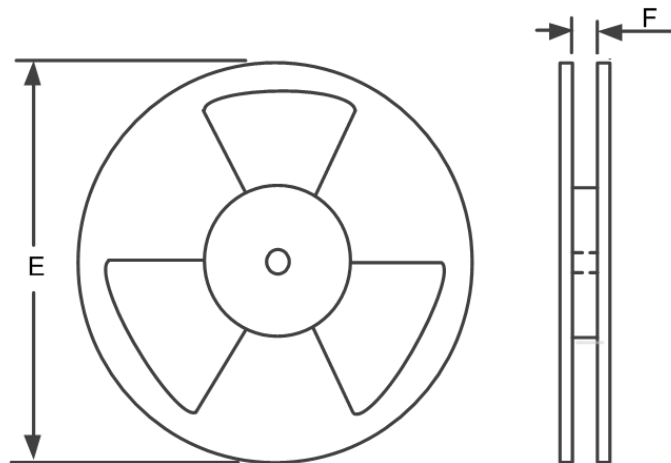
SYMBOLS	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	0.80	0.028	0.031
A1	0.00	0.05	0.000	0.002
b	0.20	0.30	0.008	0.012
D	1.90	2.10	0.075	0.083
D1	1.35	1.60	0.053	0.063
E	2.90	3.10	0.114	0.122
E1	1.25	1.60	0.049	0.063
e	0.50		0.020	
L	0.22	0.40	0.009	0.016

**Carrier Tape & Reel Dimensions**

**1. Orientation / Carrier Tape Information:**



**2. Reel Information:**



**3. Dimension Details:**

PKG Type	A	B	C	D	E	F	Q'ty/Reel
DFN 2x3	4.0 mm	1.5 mm	8.0 mm	4.0 mm	7 inches	9.0 mm	3,000

Reflow Profile

Classification Of IR Reflow Profile

Reflow Profile	Green Assembly
Average Ramp-Up Rate ( $T_{s_{min}}$ to $T_p$ )	1~2°C/second, 3°C/second max.
Preheat & Soak	
-Temperature Min( $T_{s_{min}}$ )	150°C
-Temperature Max( $T_{s_{max}}$ )	200°C
-Time( $t_{s_{min}}$ to $t_{s_{max}}$ )	60~120 seconds
Time maintained above:	
-Temperature( $T_L$ )	217°C
-Time( $t_L$ )	60~150 seconds
Peak Temperature( $T_p$ )	See Classification Temp in table 1
Time within 5°C of actual Peak Temperature( $t_p$ )	30 seconds max.
Ramp-Down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

\* Tolerance for peak profile Temperature( $T_p$ ) is defined as a supplier minimum and a user maximum.  
 \*\* Tolerance for time at peak profile temperature ( $t_p$ ) is defined as a supplier minimum and a user maximum.

Table 1. Pb-free Process –Classification Temperatures ( $T_c$ )

Package Thickness	Volume $mm^3$ <350	Volume $mm^3$ 350-2000	Volume $mm^3$ >2000
<1.6mm	260°C	260 °C	260°C
1.6mm–2.5mm	260°C	250°C	245°C
2.5mm	250 °C	245°C	245°C

**Note:** For all temperature information, please refer to topside of the package, measured on the package body surface.

