

Voltage Regulation, Photo-coupler & Phototransistor Output Applied with RCC Ringing Choke Converter

General Description

MEP7432 is a special type of photo-coupler & phototransistor. It prohibits the major feature of ME431 and integrates a precise voltage regulator into a 817-type of photo-coupler. In the application of RCC Ringing Choke Converter with photo-coupler, MEP7432 preserves the feature of the secondary-side regulation and saves the original ME431 or Zener diode. Neither the original PCB circuit nor other on-board components are affected.

Unlike some 817-type photo-couplers, the accuracy of voltage regulation in MEP7432 is no influence of the common transfer ratio of the photo-coupler (CTR) and the forward voltage of the infrared LED (V_F). The internal voltage reference of MEP7432 are trimmed in order to achieve the tight regulated voltage of $5.2V \pm 0.1V$.

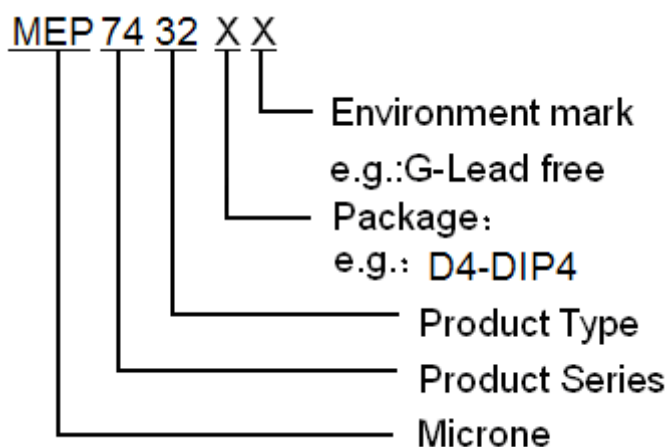
Features

- Integrate the major feature of ME431 into a 817-type photo-coupler
- Applied with RCC Ringing Choke Converter into an AC-DC power adapter
- Eliminate ME431 or Zener diode
- Pin compatible with 817-type photo-coupler
- Tight regulated voltage of $5.2V \pm 0.1V$
- Stable temperature coefficient
- Package: DIP4

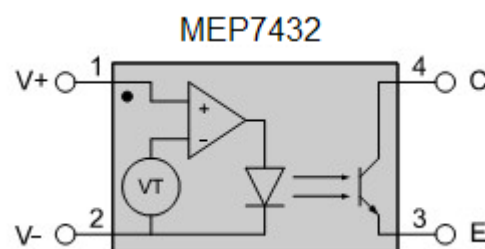
Typical Application

- Accurate voltage regulation at the secondary side with no influence of CTR Common Transfer Ratio and V_F Forward Voltage
- No external resistor to adjust voltage
- Save components : ME431, five resistors and one capacitor

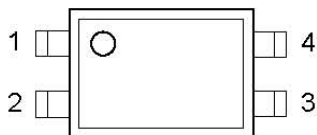
Selection Guide



Typical Application Circuit



Pin Configuration



DIP4

Pin Assignment

Pin Number	Pin Name	Functions
1	V+	Positive voltage of voltage regulator & power supply
2	V-	Negative voltage of voltage regulator
3	E	Emitter of phototransistor
4	C	Collector of phototransistor

Absolute Maximum Ratings

Parameter	Symbol	Ratings		Units
		MIN	MAX	
Input Supply Voltage (V+)-(V-)	V_{DD}	-0.3	6.5	V
Input Supply Current	I_{DD}		30	mA
Output Collector-Emitter Voltage	V_{CEO}	-6	35	V
Output Collector Current	I_C		50	mA
Output Collector Power Dissipation	P_C		150	mW
Total Power Dissipation	P_T		330	mW
Isolation Voltage	V_{ISO}		5000	V
Rated Impulse Isolation Voltage	V_{IOTM}		6000	V
Rated Repetitive Peak Isolation Voltage	V_{IOTM}		630	V
Operating Temperature	T_{OPR}	-40	+100	°C
Storage Temperature	T_{STG}	-55	+125	°C
Soldering Temperature	T_{SOL}		260	°C

Absolute maximum ratings are the values beyond which the safety of the service cannot be guaranteed.

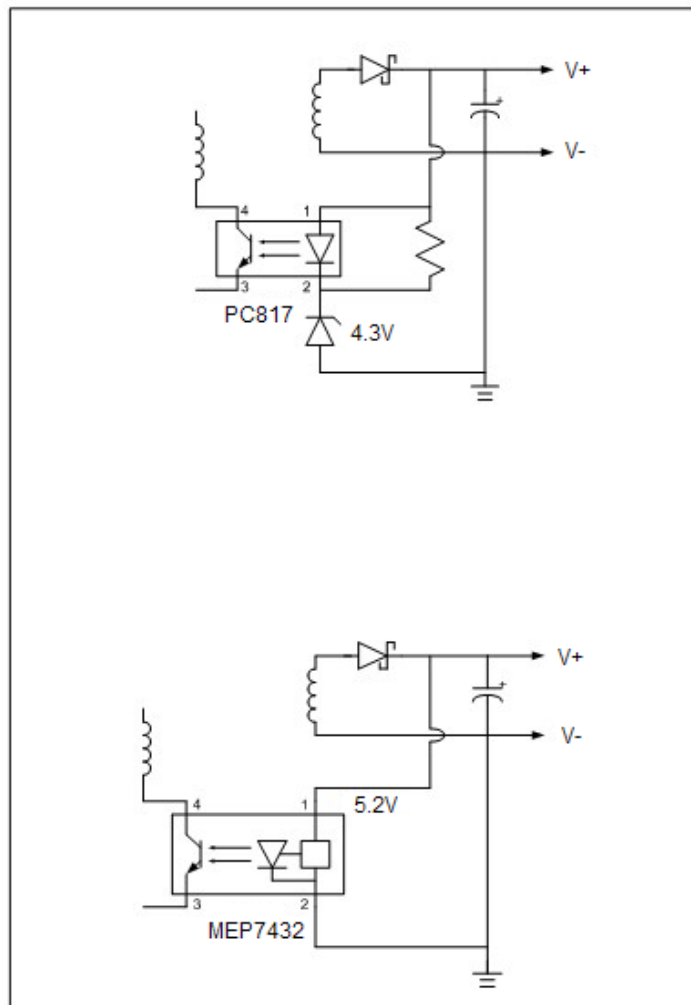
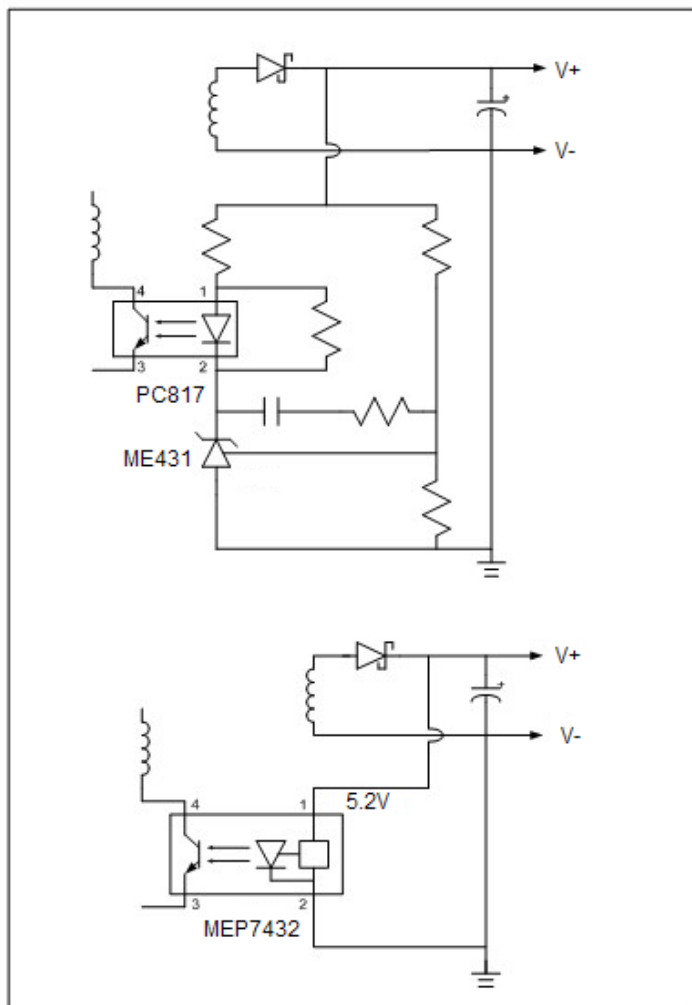
Electrical Characteristics

($V_{DD}=5.2V$, $T_a=25^{\circ}C$, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Input						
Operating Supply Voltage	V_{DD}	(V+)-(V-)	3.5		6.4	V
Operating Supply Current	I_{DD}			5.0		mA
V_{DD} Threshold voltage of regulation	V_T		5.1	5.2	5.3	V
Reverse Current	I_R	$V_{DD} = -0.6V$			100	μA
Output						
Collector dark current	I_{CEO}	$V_{CE}=20V, V_{DD}=0V$			100	nA
Collector-Emitter breakdown voltage	BV_{CEO}	$I_C=0.1mA, V_{DD}=0V$	35			V
Emitter-Collector breakdown voltage	BV_{ECO}	$I_C=0.01mA, V_{DD}=0V$	6			V
Transfer Characteristics						
Collector Current	I_C	$I_{DD}=5mA, V_{CE}=5V$	2.5		30	mA
Current transfer ratio	CTR		50		600	%
Collector-Emitter saturation voltage	V_{CESAT}	$V_{DD} < 5.5V, I_C=1mA$		0.1	0.2	v
Isolation resistance	R_{ISO}	DC=500V, R.H.=40%~60%	5×10^{10}	1×10^{11}		Ω
Floating capacitance	C_f			0.6	1	pF
Cut-off frequency at-3dB	F_{3dB}	$V_{CE}=5V, I_C=2mA, R_L=100\Omega$		TBD		kHz
Response time rise	t_r	$V_{CE}=2V, I_C=2mA, R_L=100\Omega$		TBD		μs
Response time fall	t_f			TBD		μs

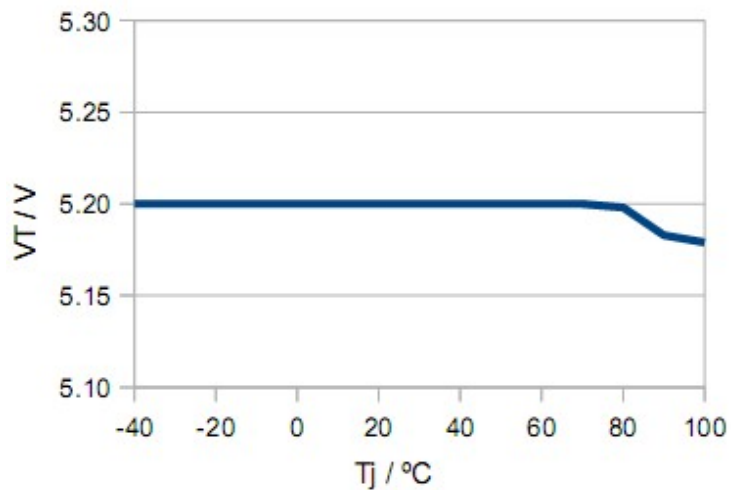
- Data and figures in the above charts are subject to change without notice .

Compatible circuits of application



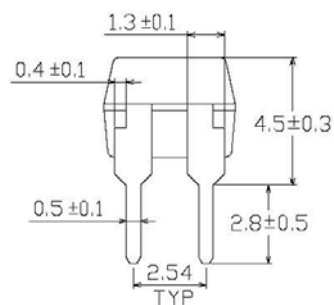
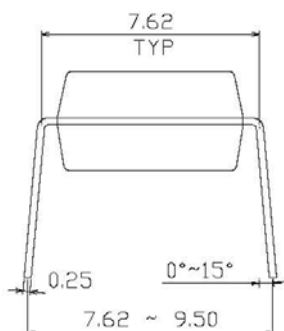
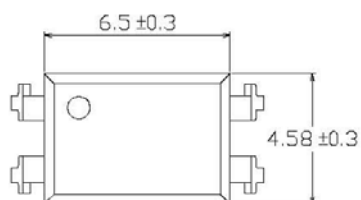
Typical performance characteristic (preliminary)

V_T (V_{DD} threshold voltage of regulation vs junction temperature



Packaging Information

- DIP4 (unit:mm)



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