

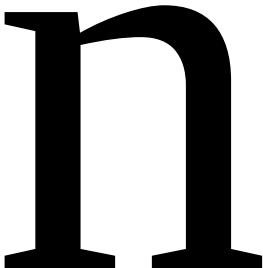


JieJie Microelectronics



ELECTRICAL CHARACTERISTICS (T_j=25 unless otherwise specified, I_{shunt} = 1mA.)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Quiescent Current	I _Q	Live to Neutral = 10V	450	500	550	μA
Reference Voltage	V _{REF}	IN+ to Neutral	5.8	6.0	6.2	V
Power Supply		Live to Neutral	12.2	12.7	13.2	V
Shunt Regulator Voltage	V _{REG}	Live to Neutral, I _{shunt} =-2mA	-0.9	-0.6	-	V
Amplifier						







Calculation of RSET Resistor

The AmpOut signal must exceed the window comparator's VTH threshold voltage for longer than the delay timer and calculated by:

$$V_{TH} = I_{FAULT} \cdot 1.41 \cdot R_{SET} \cdot \frac{\cos^2 \frac{t}{2P}}{N}$$

$$R_{SET} = \frac{V_{TH} \cdot N}{1.41 \cdot I_{FAULT} \cdot \cos\left(\frac{t}{P}\right)}$$

where: $V_{TH} = 3.5 \text{ V}$

$I_{FAULT} = 5 \text{ mA}$ UL943B

$t = 1 \text{ ms}$ timer delay

$P =$ Period of the AC Line

$N =$ Ratio of secondary to primary turns (1000:1)

$R_{SET} = 505 \text{ K}\Omega$ (511K Ω standard 1% value)

In practice, the transformer is non-ideal, so RSET may need to be adjusted by up to 30% to obtain the desired Ifault trip threshold.

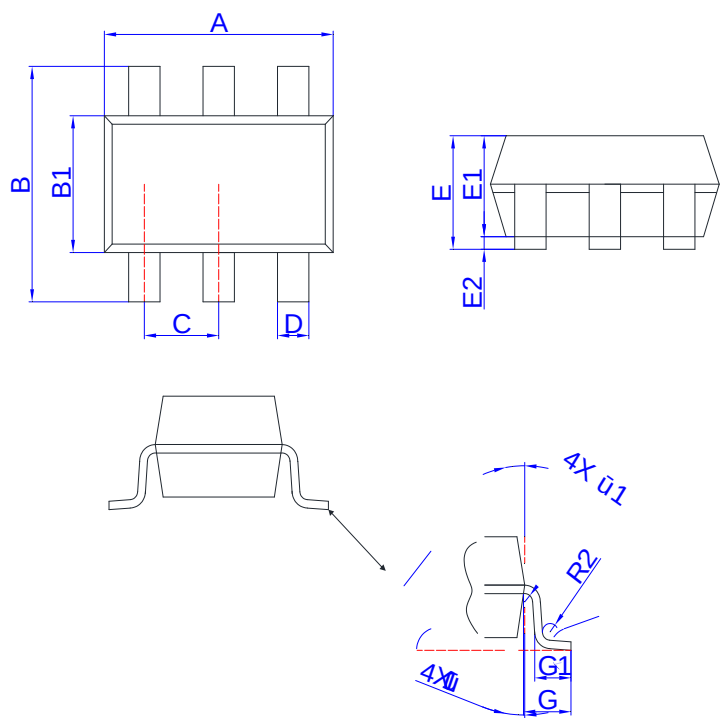
Calculation of VOS Trip Threshold Error

Since the sense coil is directly connected to the feedback of the sense amplifier, the VOS offset

ORDERING INFORMATION

Order code	Package	Base qty. (pcs)	Delivery mode	MPQ (pcs)	MOQ (pcs)
JJ146	SOT-23-6	3K	Tape and Reel	30K	120K

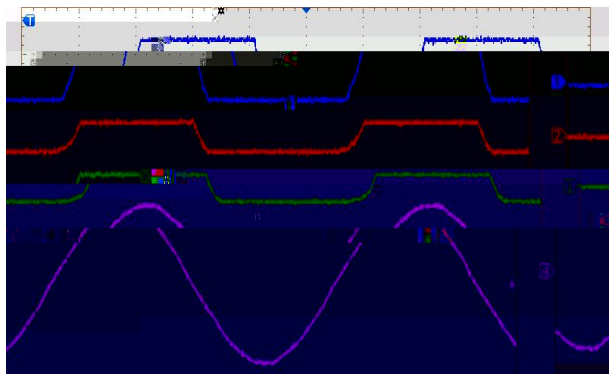
Package dimensions



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.82	2.92	3.02	0.111	0.115	0.119
B	2.60	2.80	3.00	0.102	0.11	0.118
B1	1.526	1.62	1.726	0.06	0.064	0.068
C	0.90	0.95	1.00	0.035	0.037	0.039
D	0.35	-	0.45	0.014	-	0.018
E	-	-	1.35	-	-	0.053
E1	1.00	1.10	1.20	0.039	0.043	0.047
E2	0	-	0.15	0	-	0.006
F	0.25REF			0.01REF		
G	0.6REF			0.024REF		
G1	0.35	0.45	0.60	0.014	0.018	0.024
R1	0.10	-	0.25	0.004	-	0.01
R2	0.10	-	-	0.004	-	-
u1	5°	10°	15°	5°	10°	15°
u2	0°	4°	8°	0°	4°	8°

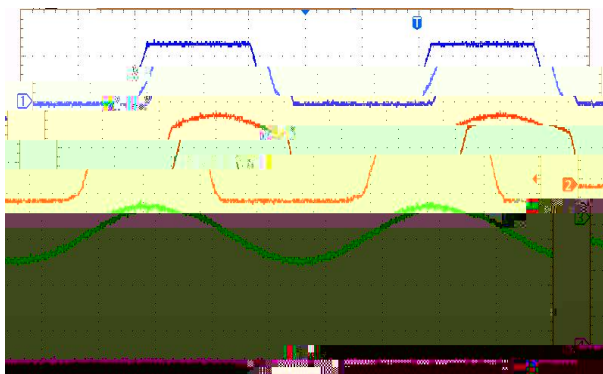
Typical characteristics (Test according to typical application diagram $T_a=25^\circ\text{C}$)

Typical Waveforms, No Ground Fault



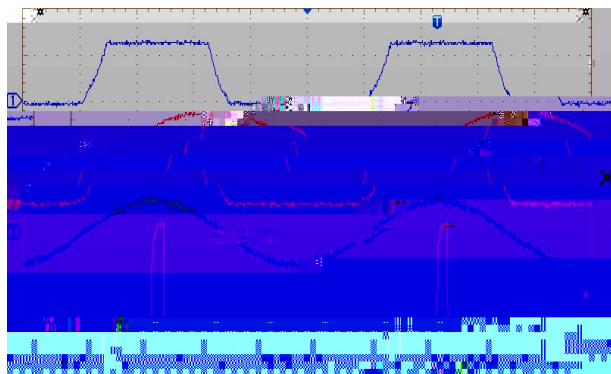
CH1: V_{LIVE} 10V/DIV
 CH2: Ampout 10V/DIV
 CH3: V_{IN+} 10V/DIV
 CH4: V_{AC} 100V/DIV
 Time: 4ms/DIV

4mA Ground Fault



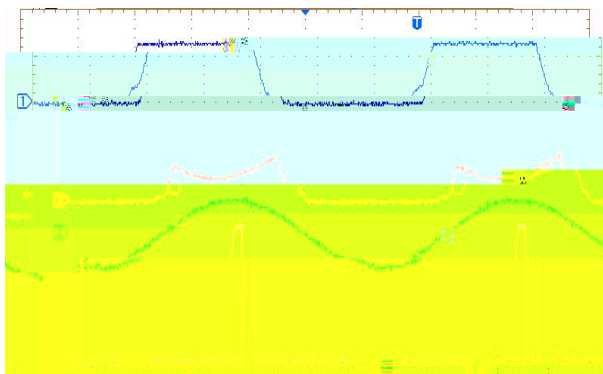
CH1: V_{LIVE} 10V/DIV
 CH2: Ampout 5V/DIV
 CH3: I_{FAULT} 10mA/DIV
 CH4: Driver 1V/DIV
 Time: 4ms/DIV

5mA Ground Fault



CH1: V_{LIVE} 10V/DIV
 CH2: Ampout 5V/DIV
 CH3: I_{FAULT} 10mA/DIV
 CH4: Driver 1V/DIV
 Time: 4ms/DIV

5mA Ground Fault (coil reverse)



CH1: V_{LIVE} 10V/DIV
 CH2: Ampout 5V/DIV
 CH3: I_{FAULT} 10mA/DIV
 CH4: Driver 1V/DIV
 Time: 4ms/DIV

JJ146 Series

