

Product Manual

EKWIN ELECTRONICS CO.,LTD

EK Z0405

www.ekwin.net

Standard TRIACS

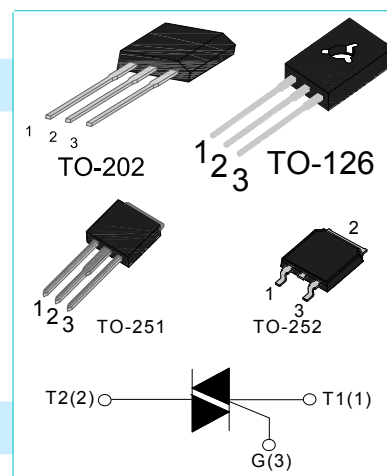
Z0405 Serial

Main Features:

$I_{T(RMS)}$	V_{DRM}/V_{RRM}	V_{TM}
4 A	600V and 800 V	≤ 2 V

Description:

The Z0405 series is suitable for general purpose AC switching applications. They can be found in applications such as home appliances(electrovalve, pump, door lock, small lampcontrol), fan speed controllers



Absolute Ratings(limiting values) :

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (full sine wave)	TO-251/252 ($T_C=80^\circ\text{C}$)	4	A
		TO-126/ 202 ($T_C=75^\circ\text{C}$)		
I_{TSM}	Non repetitive surge peak on-state current (full cycle, T_j initial = 25°C)	F = 50 Hz t = 20 ms	20	A
		F = 60 Hz t = 16.7 ms	21	
T_{stg}	Storage junction temperature range		- 40 to + 150	$^\circ\text{C}$
T_j	Operating junction temperature range		- 40 to + 125	
I^2t	I^2t value for fusing	tp = 10 ms	2.2	A^2s
dI/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, tr ≤ 100 ns	F = 120 Hz $T_j = 125^\circ\text{C}$	20	$\text{A}/\mu\text{s}$
I_{GM}	Peak gate current	tp = 20 μs $T_j = 125^\circ\text{C}$	1.2	A
$P_{G(AV)}$	Average gate power dissipation	$T_j = 125^\circ\text{C}$	0.2	W

Electrical Characteristics : (T_j = 25° C, unless otherwise specified)

Symbol	Test Condition	Quadrant	Range	Z04				Unit
				02	05	09	10	
I_{GT}⁽¹⁾	V _D =12V R _L =33Ω	I-II-III-IV	MAX	3	5	10	25	mA
V_{GT}		ALL	MAX	1.3				V
V_{GD}	V _D =V _{DRM} R _L =3.3kΩ T _j =125°C	ALL	MIN	0.2				V
I_L	I _G =1.2 I _{GT}	I-III-IV	MAX	6	5	15	25	mA
		II		12	10	25	25	
I_H⁽²⁾	I _T = 50mA		MAX	3	5	10	25	mA
dV/dt⁽²⁾	V _D =6%V _{DRM} Gate Open T _j =110°C		MIN	10	20	100	200	V/μs
(dV/dt)_c⁽²⁾	(dI/dt) _c =1.8A/ms T _j =110°C		MIN	0.5	1	2	5	V/μs

1. minimum I_{GT} is guaranteed at 5% of I_{GT} max.

2. for both polarities of A2 referenced to A1.

Static Characteristics

Symbol	Parameter		Value(MAX)	Unit
V_{TM}¹	I _{TM} = 5.5A tp= 380μs	T _j =25°C	2.0	V
V_{to}⁽¹⁾	Threshold voltage	T _j =125°C	0.95	V
R_d⁽¹⁾	Dynamic resistance	T _j =125°C	180	mΩ
I_{DRM} I_{RRM}	V _D =V _{DRM} , V _R =V _{RRM}	T _j =25°C	5	μ A
		T _j =125°C	0.5	mA

1. for both polarities of A2 referenced to A1.

Thermal Resistances :

Symbol	Param		Value	Unit
R _{th(j-c)}	junction to case(AC)	TO-251/252	6.5	°C/W
		TO-202/126	7.2	

FIG.1: Maximum power dissipation versus RMS on-state current

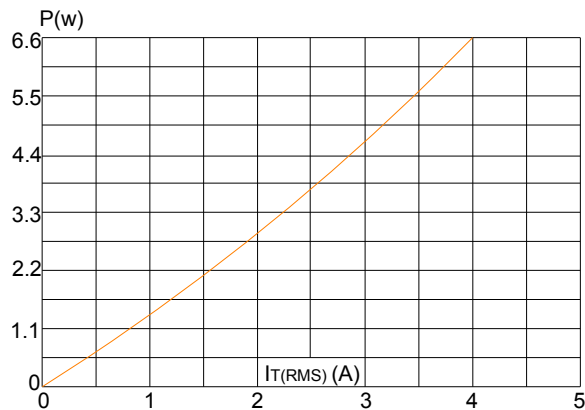


FIG.2: RMS on-state current versus case temperature

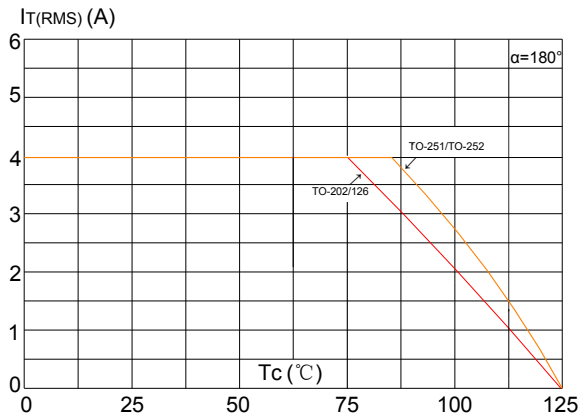


FIG.3: Surge peak on-state current versus number of cycles

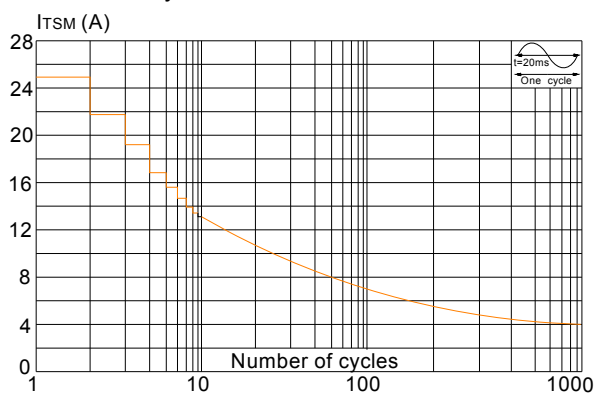


FIG.4: On-state characteristics (maximum values)

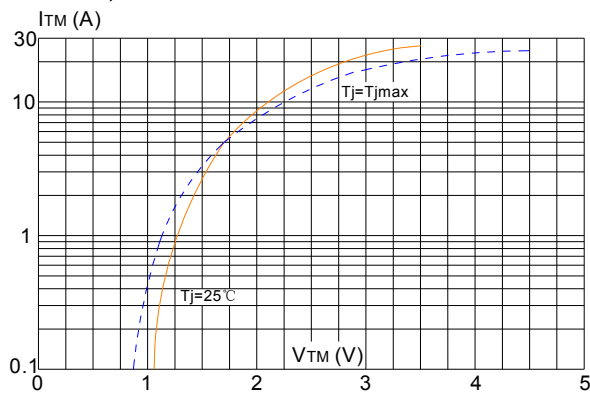


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$ and corresponding value of I^2t (I - II - III: $dI/dt < 50\text{A}/\mu\text{s}$; IV: $dI/dt < 10\text{A}/\mu\text{s}$)

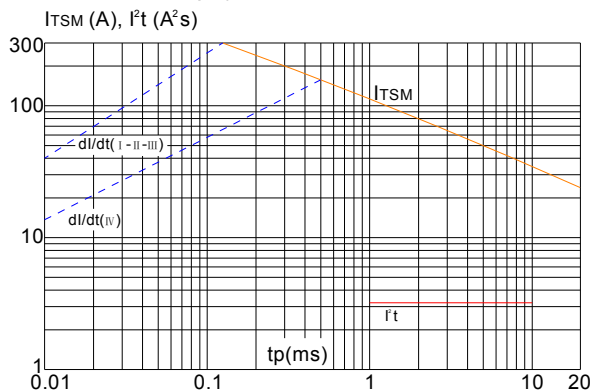


FIG.6: Relative variations of gate trigger current versus junction temperature

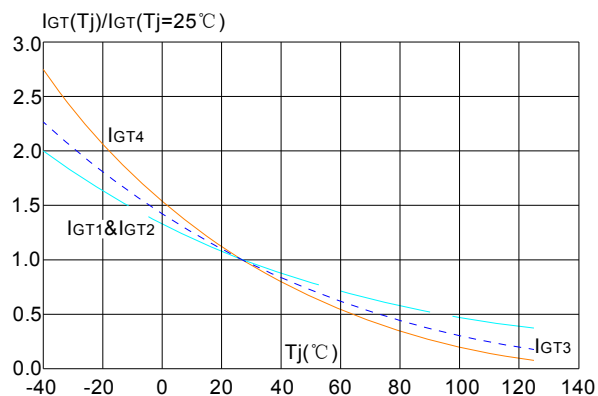


FIG.7: Relative variations of holding current versus junction temperature

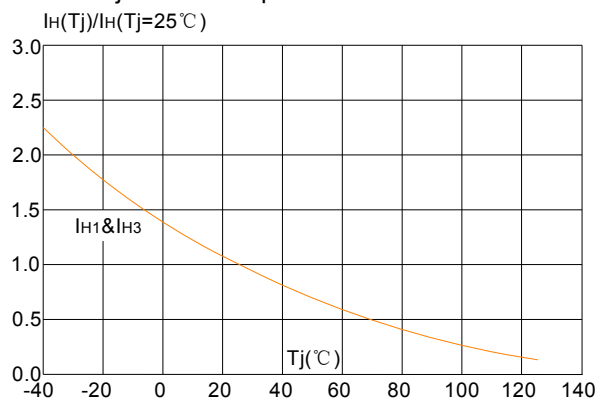
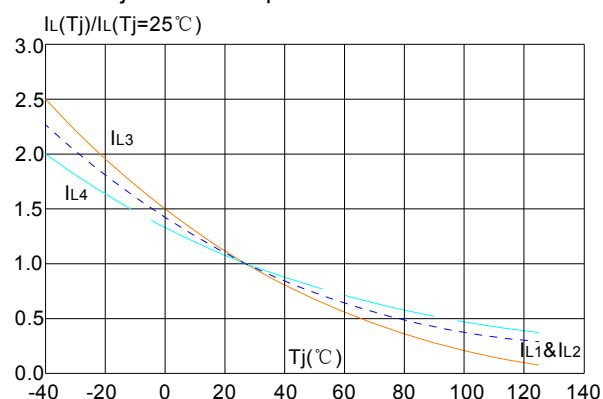


FIG.8: Relative variations of latching current versus junction temperature

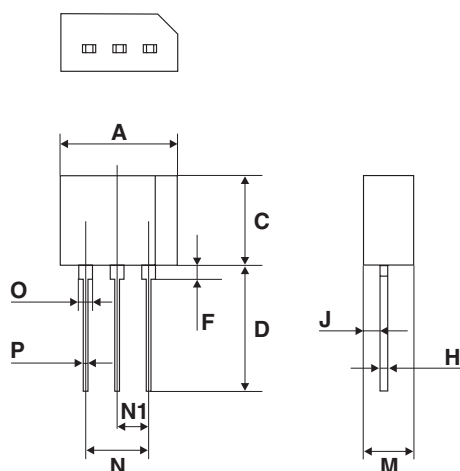


Ordering Information:

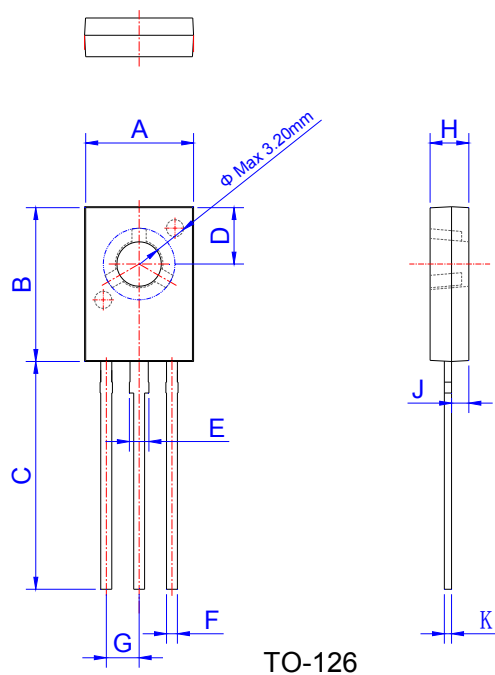
E KWIN ELECTRONICS CO.,LTD		EK	Z	04	05
Triaç series					02 = 3mA 05 = 5mA 09 = 10mA 10 = 25mA
		$I_{T(RMS)}:4A$			

Package Mechanical Data :

TO202-3

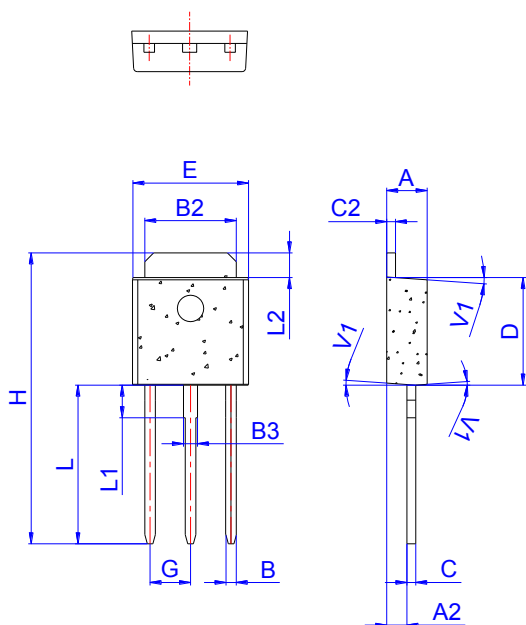


REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			10.1			0.398
C		7.3			0.287	
D		10.5			0.413	
F			1.5			0.059
H		0.51			0.020	
J		1.5			0.059	
M		4.5			0.177	
N			5.3			0.209
N1		2.54			0.100	
O			1.4			0.055
P			0.7			0.028



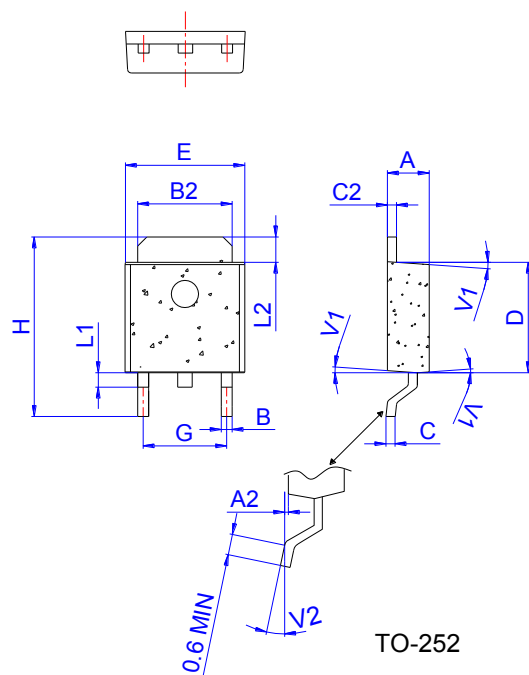
TO-126

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	7.40		7.80	0.291		0.307
B	10.6		11.2	0.417		0.441
C	15.3		16.3	0.602		0.642
D	3.90		4.10	0.154		0.161
E	1.17		1.47	0.046		0.058
F	0.66		0.86	0.026		0.034
G		2.29			0.090	
H	2.50		2.90	0.098		0.114
J	1.10		1.50	0.043		0.059
K	0.45		0.60	0.018		0.024

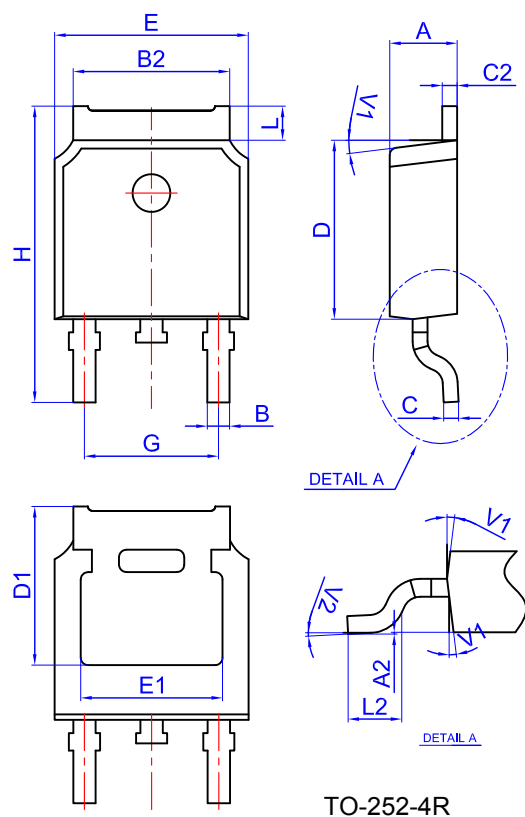


TO-251

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.095
A2	0.90		1.20	0.035		0.047
B	0.55		0.65	0.022		0.026
B2	5.10		5.40	0.200		0.213
B3	0.76		0.85	0.030		0.033
C	0.45		0.62	0.018		0.024
C2	0.48		0.62	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.70	0.252		0.264
G		2.30			0.091	
H	16.0		17.0	0.630		0.669
L	8.90		9.40	0.350		0.370
L1	1.80		1.90	0.071		0.075
L2	1.37		1.50	0.054		0.059
V1		4°			4°	



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.095
A2	0.03		0.23	0.001		0.009
B	0.55		0.65	0.022		0.026
B2	5.10		5.40	0.200		0.213
C	0.45		0.62	0.018		0.024
C2	0.48		0.62	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.70	0.252		0.264
G	4.40		4.70	0.173		0.185
H	9.35		10.6	0.368		0.417
L1	1.30		1.70	0.051		0.067
L2	1.37		1.50	0.054		0.059
V1		4°			4°	
V2	0°		8°	0°		8°



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°