

CS410M1A

主要参数 MAIN CHARACTERISTICS

$I_{T(AV)}$	4A
V_{DRM}/V_{RRM}	600V
I_{GT}	1-15mA

用途

- 半交流开关
- 相位控制

APPLICATIONS

- Half AC switching
- Phase control

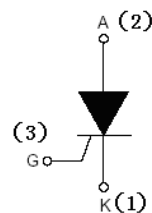
产品特性

- 玻璃钝化芯片，高可靠性和一致性
- 低通态电流和高浪涌电流能力
- 环保 RoHS 产品

FEATURES

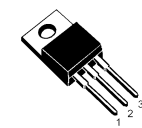
- Glass-passivated mesa chip for reliability and uniform
- Low on-state voltage and High I_{TSM}
- RoHS products

封装 Package

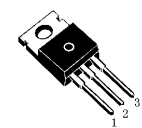


序号 Pin	引线名称 Description
1	阴极 K
2	阳极 A
3	门极 G

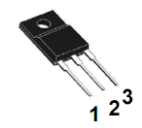
TO-220



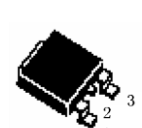
TO-220C



TO-220MF-K1



DPAK



IPAK



TO-263





订货信息 ORDER MESSAGE

订 货 型 号 Order codes				印 记 Marking	封 装 Package
有卤-条管	无卤-条管	有卤-袋装	有卤-袋装	BT151	TO-220
Halogen-Tube	halogen-Free-Tube	Halogen- Bag	Halogen-Free-Bag		
CS410M1A-CA-B	CS410M1A-CA-BR	CS410M1A-CA-C	CS410M1A-CA-CR		
有卤-条管	无卤-条管	有卤-袋装	有卤-袋装		TO-220C
Halogen-Tube	halogen-Free-Tube	Halogen- Bag	Halogen-Free-Bag		
CS410M1A-C-B	CS410M1A-C-BR	CS410M1A-C-C	CS410M1A-C-CR		
有卤-条管	无卤-条管	有卤-袋装	有卤-袋装		TO-220MF-K1
Halogen-Tube	halogen-Free-Tube	Halogen- Bag	Halogen-Free-Bag		
CS410M1A-F1-B	CS410M1A-F1-BR	CS410M1A-F1-C	CS410M1A-F1-CR		
有卤-条管	无卤-条管	有卤-袋装	有卤-袋装		TO-263
Halogen-Tube	halogen-Free-Tube	Halogen- Bag	Halogen-Free-Bag		
CS410M1A-S-B	CS410M1A-S-BR	CS410M1A-S-C	CS410M1A-S-CR		
有卤-编带	无卤-编带	有卤-袋装	有卤-袋装		DPAK
Halogen-Reel	Halogen-Free-Reel	Halogen- Bag	Halogen-Free-Bag		
CS410M1A-R-A	CS410M1A-R-AR	CS410M1A-R-C	CS410M1A-R-CR		
有卤-条管	无卤-条管	有卤-袋装	有卤-袋装		IPAK
Halogen-Tube	halogen-Free-Tube	Halogen- Bag	Halogen-Free-Bag		
CS410M1A-V-B	CS410M1A-V-BR	CS410M1A-V-C	CS410M1A-V-CR		



绝对最大额定值 ABSOLUTE RATINGS ($T_c=25^{\circ}\text{C}$)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit
断态重复峰值电压 Repetitive peak off-state voltage	V_{DRM}	600	V
反向重复峰值电压 Repetitive peak reverse voltage	V_{RRM}	600	V
通态平均电流 Average on-state current (half sine wave)	$I_{\text{T(AV)}}$	4	A
通态方均根电流 On-state RMS current (all conduction angles)	$I_{\text{T(RMS)}}$	12	A
非重复浪涌峰值通态电流 Non- repetitive surge peak on-state current (half sine wave , $t=10\text{ms}$)	I_{TSM}	110	A
I^2t for fusing ($t=10\text{ms}$)	I^2t	60	A^2s
门极峰值电流 Peak gate current	I_{GM}	2	A
门极峰值电压 Peak gate voltage	V_{GM}	5	V
反向门极峰值电压 Peak reverses gate voltage	V_{RGM}	5	V
门极峰值功率 Peak gate power	P_{GM}	5	W
门极平均功率 Average gate power (over any 20ms period)	$P_{\text{G(AV)}}$	0.5	W
存储温度 Storage temperature	T_{stg}	-40~150	$^{\circ}\text{C}$
操作结温 Operation junction temperature	T_{J}	125	$^{\circ}\text{C}$



静态特性 STATIC CHARACTERISTICS ($T_c=25^{\circ}\text{C}$ unless otherwise stated)

项 目 Parameter	符号 Symbol	测试条件 Tests conditions	最小 min	典型 typ	最大 max	单位 Unit
断态峰值重复电流 Peak Repetitive Blocking Current	I_{DRM}	$V_{\text{DM}} = V_{\text{DRM}(\text{MAX})}$, $T_j = 125^{\circ}\text{C}$	-	-	1.0	mA
反向峰值重复电流 Peak Repetitive Reverse Current	I_{RRM}	$V_{\text{RM}} = V_{\text{RRM}(\text{MAX})}$, $T_j = 125^{\circ}\text{C}$	-	-	1.0	mA
峰值通态电压 Peak on-state voltage	V_{TM}	$I_{\text{TM}} = 23\text{A}$	-	1.40	1.75	V
门极触发电流 Gate trigger current	I_{GT}	$V_{\text{DM}} = 12\text{V}, I_{\text{T}} = 0.1\text{A}$	1	4	15	mA
门极触发电压 Gate trigger voltage	V_{GT}	$V_{\text{DM}} = 12\text{V}, I_{\text{T}} = 0.1\text{A}$	-	0.8	1.5	V
维持电流 Holding current	I_{H}	$V_{\text{DM}} = 12\text{V}, I_{\text{GT}} = 0.1\text{A}$	-	-	25	mA
擎住电流 Latching current	I_{L}	$V_{\text{DM}} = 12\text{V}, I_{\text{GT}} = 0.1\text{A}$	-	-	40	mA

动态特性 DYNAMIC CHARACTERISTICS ($T_c=25^{\circ}\text{C}$ unless otherwise stated)

项 目 Parameter	符号 Symbol	测试条件 Tests conditions	最小 min	典型 typ	最大 max	单位 Unit
断态临界电压上升率 Critical rate of rise of off- state voltage	dV/dt	$V_{\text{DM}} = 67\% V_{\text{DRM}(\text{MAX})}$, $T_j = 125^{\circ}\text{C}$	100	-	-	V/ μs

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	值 value	单位 Unit
结到管壳的热 Thermal resistance junction to case	TO-220(C)\TO-263 $R_{\text{th(j-c)}}$	1.3 max	$^{\circ}\text{C}/\text{W}$
	DAK\IPAK $R_{\text{th(j-c)}}$	1.8 max	
结到散热片的热阻 Thermal resistance junction to heatsink	TO-220MF-K1 $R_{\text{th(j-hs)}}$	4.5 max	
结到环境的热阻 Thermal resistance junction to ambient (half cycle)	$R_{\text{th(j-a)}}$	60 typ	

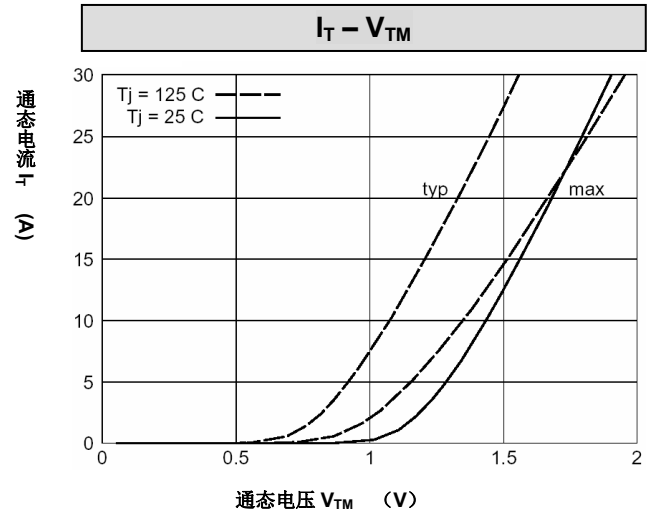
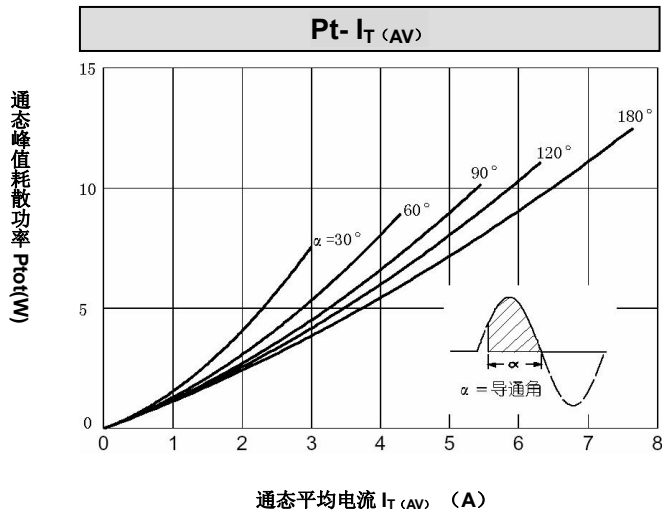
电绝缘特性 ELECTRICAL ISOLATION

项 目 Parameter	符号 Symbol	测试条件 Tests conditions	数值 Value	单位 Unit
绝缘电压 Isolation voltage	V_{ISOL}	1 minute, leads to mounting tab TO-220MF-K1	2000	V

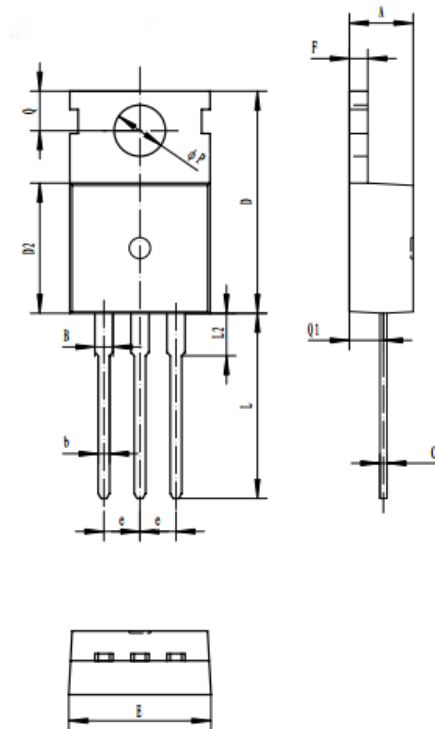




特征曲线 ELECTRICAL CHARACTERISTICS (curves)

外形尺寸 PACKAGE MECHANICAL DATA
TO-220C

单位 Unit : mm



A	4.30-4.70
B	1.22-1.40
b	0.70-0.95
c	0.40-0.65
D	15.2-16.2
D2	9.00-9.40
E	9.70-10.10
e	2.39-2.69
F	1.25-1.40
L	12.60-13.60
L2	2.80-3.20
Q	2.60-3.00
Q1	2.20-2.60
P	3.50-3.80

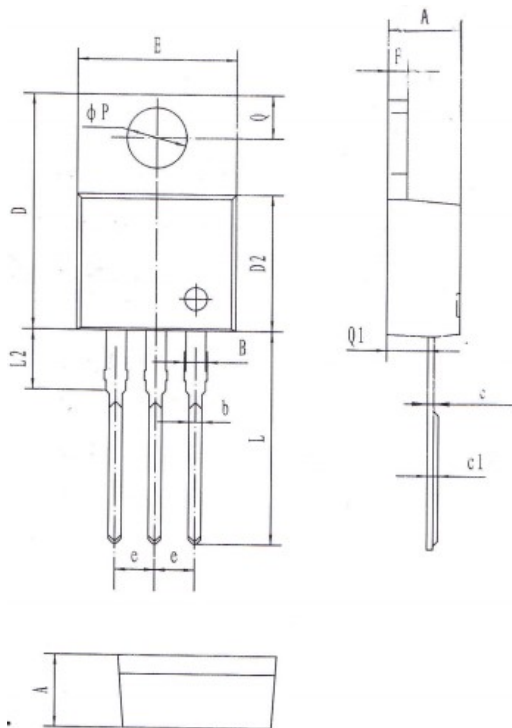




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CS410M1A

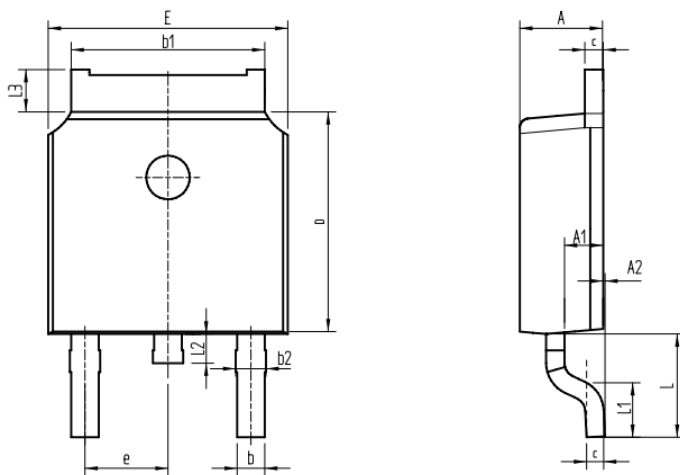
单位 Unit : mm



A	4.40-4.80
B	1.10-1.40
b	0.70-0.95
c	0.28-0.48
c1	0.32-0.52
D	14.45-16.00
D2	8.20-9.20
E	9.60-10.40
e	2.39-2.69
F	1.20-1.35
L	13.05-14.05
L2	3.70-3.90
Q	2.40-3.00
Q1	2.20-2.90
P	3.50-4.00

DPAK

单位 Unit : mm



A	2.16-2.41
A1	0.97-1.17
A2	0.00-0.15
b	0.63-0.93
b1	5.13-5.53
b2	0.66-0.96
c	0.40-0.60
D	5.80-6.40
E	6.30-6.90
e	2.286 BSC
L	2.50-3.30
L1	1.20-1.80
L2	0.60-1.00
L3	0.85-1.30

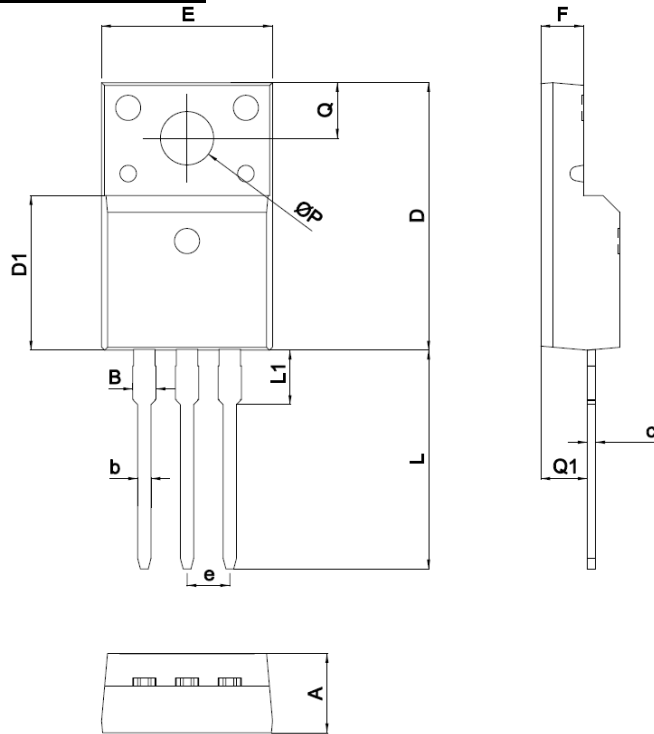




CS410M1A

TO-220MF-K1

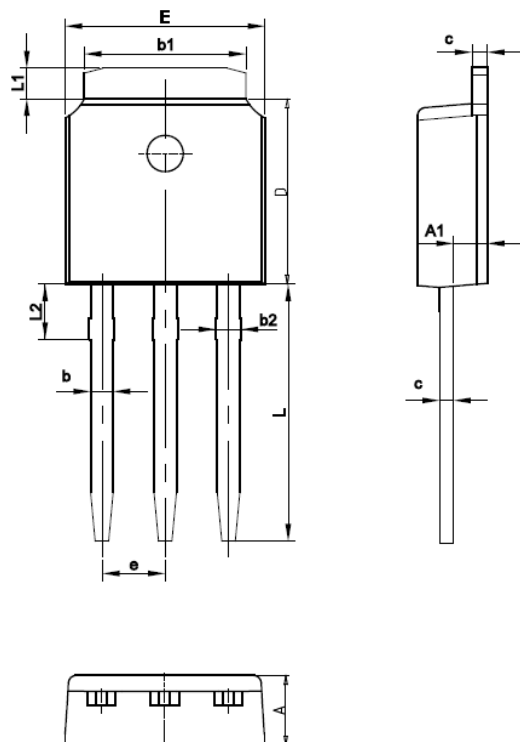
单位 Unit : mm



SYMBOL	mm	
	MIN	MAX
A	4.5	4.9
B	1.22	1.47
b	0.7	0.9
c	0.45	0.60
D	15.6	16.1
D1	9.0	9.3
e	2.54TYPE	
E	9.9	10.4
F	2.3	2.8
L	12.6	13.3
L1	3.1	3.4
Q	3.2	3.4
Q1	2.6	2.9
ΦP	3.0	3.5

IPAK

单位 Unit : mm



SYMBOL	MM	
	MIN	MAX
A	2.10	2.50
A1	0.87	1.27
b	0.63	0.93
b1	5.13	5.53
b2	0.67	1.00
c	0.40	0.60
D	5.80	6.40
E	6.30	6.90
L	9.10	9.70
e	2.286BSC	
L1	0.82	1.22
L2	0.90	1.20

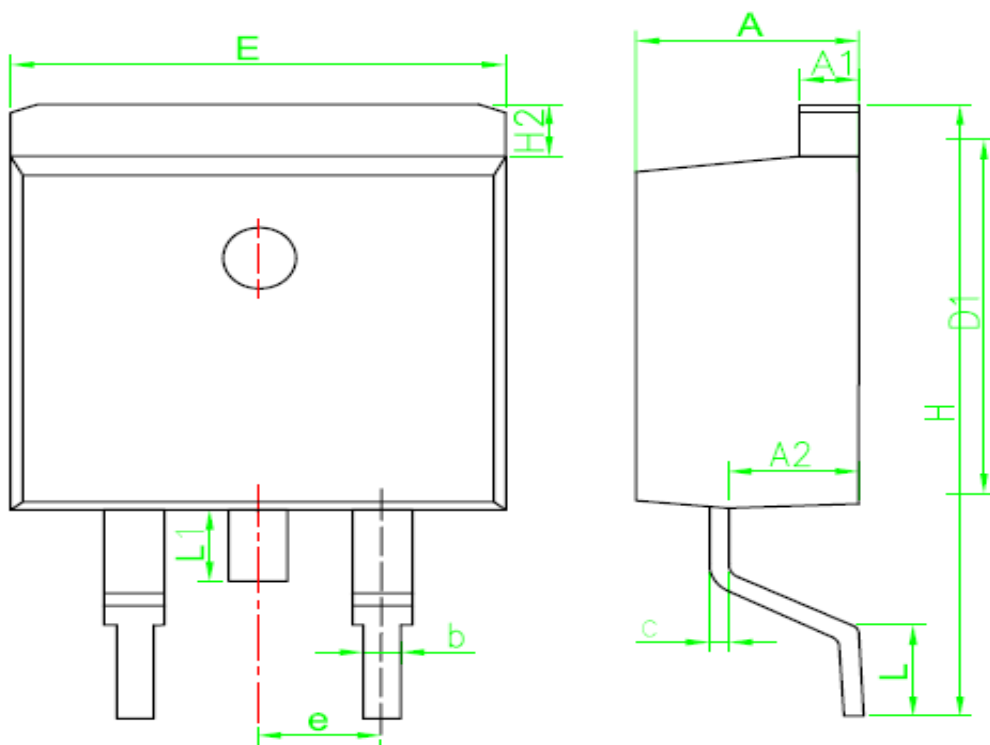




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CS410M1A

单位 Unit : mm



SYMBOL	MM	
	MIN	MAX
A	4.30	4.80
A1	1.12	1.42
A2	2.54	2.84
b	0.67	1.00
c	0.29	0.52
D1	8.40	9.00
E	9.80	10.46
e	2.54BSC	
H	14.00	16.00
H2	1.12	1.45
L	1.50	3.10
L1	1.45	1.70





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