



**THE DATASHEET OF
12TQ040S**



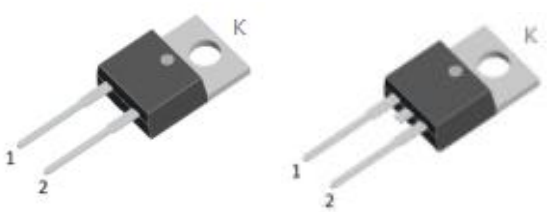
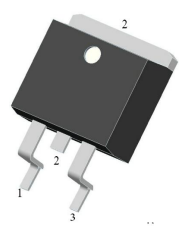

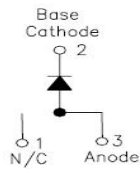
12TQ035/S 12TQ040/S 12TQ045/S SCHOTTKY RECTIFIER

Features

- 150°C T_J operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Terminals finish: Tin Lead-free plated
- This is a Pb – Free Device
- All SMC parts are traceable to the wafer lot
- Additional testing can be offered upon request

Applications

- Switching power supply
- Redundant power subsystems
- Converters
- Free-Wheeling diodes
- Reverse battery protection

12TQ...	12TQ...S
	
	
TO-220AC	D ² PAK

Maximum Ratings@T_C=25°C unless otherwise specified

Characteristics	Symbol	Condition	Max.	Units
Peak Repetitive Reverse Voltage	V _{RRM}	-	35	V
Working Peak Reverse Voltage	V _{RWM}		40	
DC Blocking Voltage	V _R		45	
Average Rectified Forward Current	I _{F(AV)}	50% duty cycle @T _C =120°C, rectangular wave form	15	A
Peak One Cycle Non-Repetitive Surge Current	I _{FSM}	8.3ms, Half Sine pulse	300	A
Non-Repetitive Avalanche Energy	E _{AS}	T _J =25°C, I _{AS} =0.5A, L=60mH	16	mJ
Repetitive Avalanche Current	I _{AR}	Current decaying linearly to zero in 1 μsec Frequency limited by T _J max.V _A =1.5×V _R typical	2.4	A

Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V _{F1}	@ 15A, Pulse, T _J = 25 °C @ 30A, Pulse, T _J = 25 °C	0.52 0.64	0.56 0.71	V
	V _{F2}	@ 15A, Pulse, T _J = 125 °C @ 30A, Pulse, T _J = 125 °C	0.46 0.62	0.50 0.64	V
Reverse Current *	I _{R1}	@V _R = rated V _R T _J = 25 °C	0.05	1.0	mA
	I _{R2}	@V _R = rated V _R T _J = 125 °C	18	70	mA
Junction Capacitance	C _T	@V _R = 5V, T _C = 25 °C f _{SIG} = 1MHz	756	900	pF
Series Inductance	L _S	Measured lead to lead 5 mm from package body	8.0	-	nH
Voltage Rate of Change	dv/dt	-	-	10,000	V/μs

* Pulse width < 300 μs, duty cycle < 2%

Thermal-Mechanical Specifications:

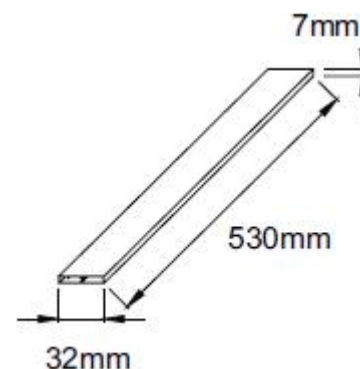
Characteristics	Symbol	Condition	Specification	Units
Junction Temperature	T _J	-	-55 to +150	°C
Storage Temperature	T _{stg}	-	-55 to +150	°C
Typical Thermal Resistance Junction to Case	R _{θJC}	DC operation	2.0	°C/W
Typical Thermal Resistance Case to Heat Sink	R _{θCS}	Mounting surface, smooth and greased(only for TO-220)	0.50	°C/W
Case Style	TO-220AC D ² PAK			

Tube Specification

Device	Package	Weight	Shipping
12TQ...	TO-220AC	1.8g	50pcs / tube
12TQ...S	D ² PAK	1.85g	800pcs / reel

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.

Tube Specification(TO-220AC)



Ratings and Characteristics Curves

Figure 1 Typical Forward Characteristics

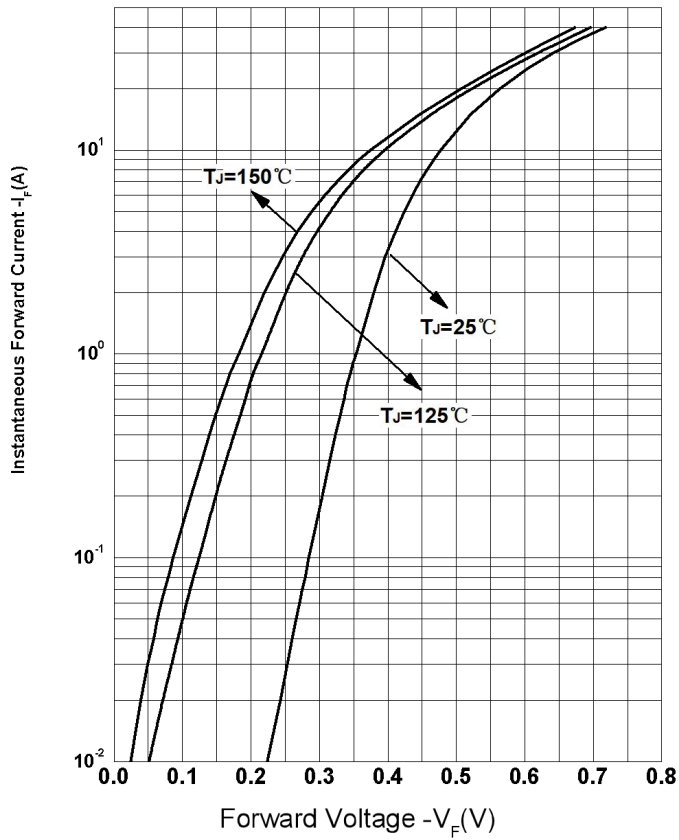


Figure 2 Typical Reverse Characteristics

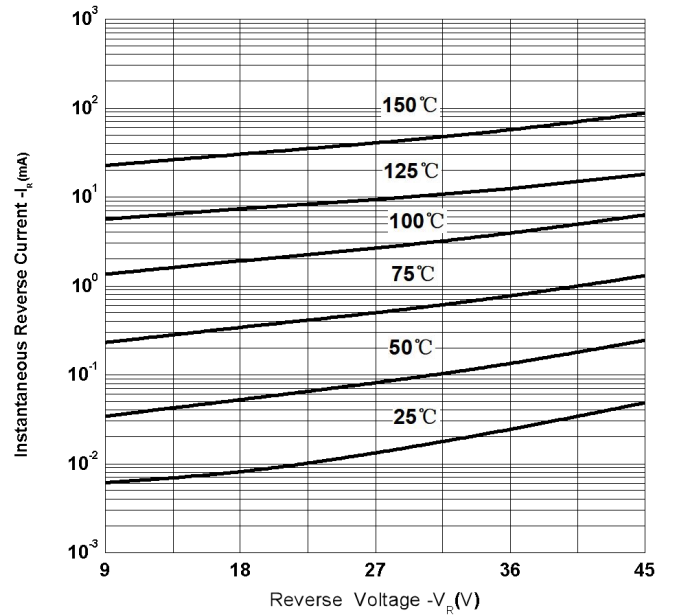
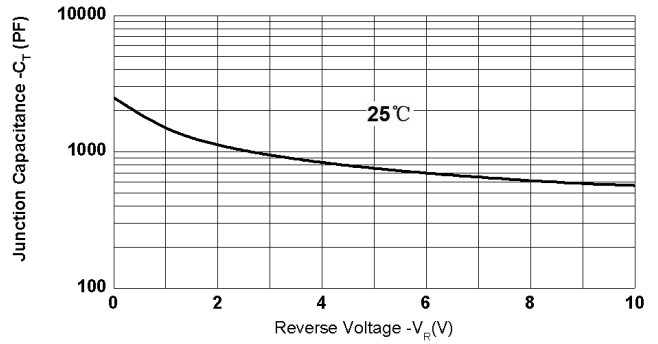
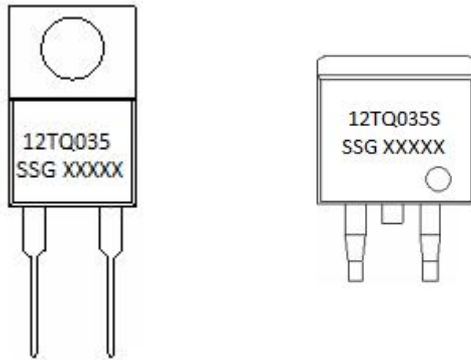


Figure 3 Typical Junction Capacitance



Marking Diagram

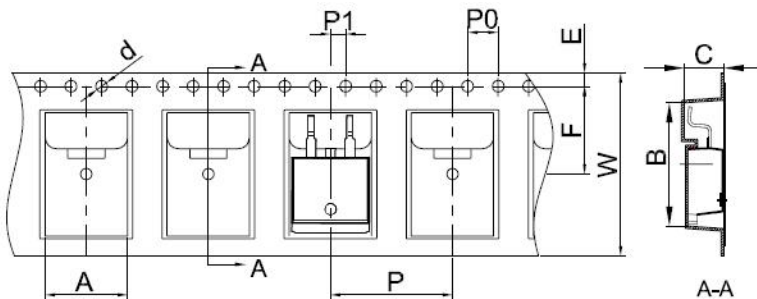


Where XXXXX is YYWWL

12 = Forward Current (12A)
TQ = Device Type
35/40/45 = Reverse Voltage (35/40/45V)
S = Package type
SSG = SSG
YY = Year
WW = Week
L = Lot Number

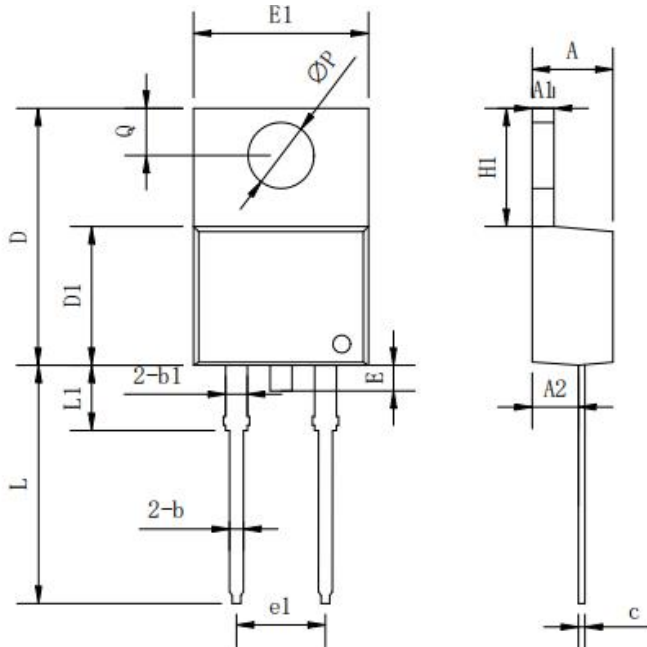
Cautions: Molding resin
Epoxy resin UL:94V-0

Carrier Tape Specification D²PAK



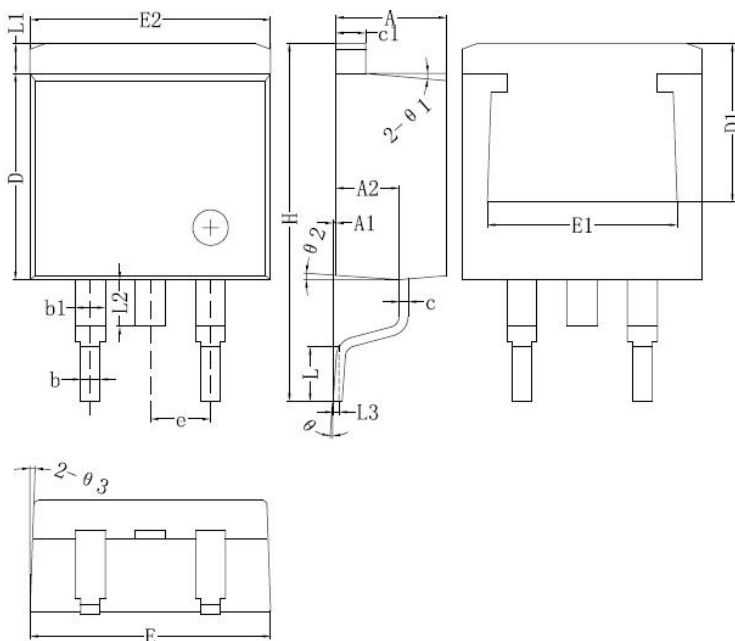
Symbol	Millimeters	
	Min.	Max.
A	10.70	10.90
B	16.03	16.23
C	5.11	5.31
d	1.45	1.65
E	1.65	1.85
F	11.40	11.60
P0	3.90	4.10
P	15.90	16.10
P1	1.90	2.10
W	23.90	24.30

Mechanical Dimensions TO-220AC



Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	3.56	-	4.83
A1	0.51	-	1.4
A2	2.03	-	2.92
b	0.38	-	1.02
b1	1.14	-	1.78
c	0.31	-	0.61
D	14.22	-	16.51
D1	8.38	-	9.42
E	-	-	1.78
E1	9.65	10.16	10.67
e1	-	5.08	-
H1	5.84	-	6.86
L	12.7	-	14.73
L1	-	-	6.35
ØP	-	3.56	-
Q	2.54	-	3.43

Mechanical Dimensions D²PAK



Symbol	Dimensions in millimeters	
	Min.	Max.
A	4.06	4.83
A1	0	0.26
b	0.51	0.99
b1	1.14	1.78
c	0.31	0.74
c1	1.14	1.65
D	8.38	9.65
D1	6.4	
E1	6.22	
E2	9.65	10.67
e	2.54BSC	
H	14.6	15.88
L	1.78	2.8
L1	-	1.68
L2	-	2.2
L3	0.255BSC	
Ø	0	8°

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