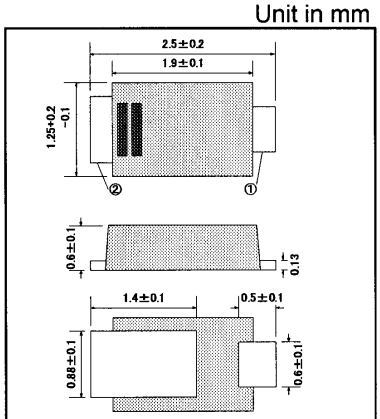
TOSHIBA Schottky Barrier Rectifier Schottky Barrier Type

TENTATIVE

CUS02

Unit in mm



JEDEC	-
JEITA	
TOSHIBA	

Weight:0.004g

Swithing mode power supply applications
Portable equipment battery application

Forward Voltage : V_{FM}=0.45V(max)
Average Forward Current : $I_{F(AV)}$=0.7A
Repetitive Peak Reverse Voltage : V_{RRM}=30V
Small & Thin package " US-FLAT™ "(Toshiba package name)

Maximum Ratings(Ta=25°C)

Characteristics	Symbol	Rating	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	30	V
Average Forward Current	$I_{F(AV)}$	0.7	A
Peak one Cycle Surge Forward Current	I_{FSM}	20(50Hz)	A
Junction Temperature	T_j	-40 ~ 150	°C
Storage Temperature Range	T_{stg}	-40 ~ 150	°C

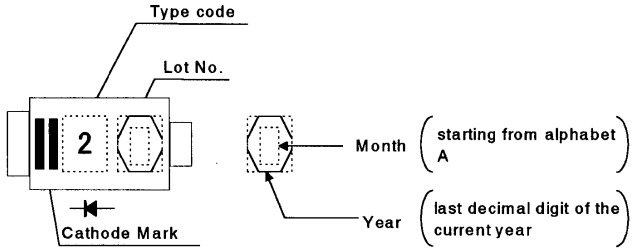
Note: Ta=77°C:On glass-epoxy substrate
substrate size:50mm×50mm
land size:6mm×6mm
Rectangular waveform(α=180°),VR=15V

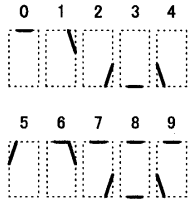
Electrical Characteristics (Ta=25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Peak Forward Voltage	$V_{FM(1)}$	I_{FM}=0.1A	-	0.35	-	V
	$V_{FM(2)}$	I_{FM}=0.3A	-	0.38	-	
	$V_{FM(3)}$	I_{FM}=0.7A	-	0.42	0.45	
Repetitive Peak Reverse Current	$I_{RRM(1)}$	V_{RRM}=5V	-	0.7	-	μA
	$I_{RRM(2)}$	V_{RRM}=30V	-	10	100	
Junction Capacitance	Cj	VR=10V,f=1.0MHz	-	40	-	pF
Thermal Resistance	Rth(j-a)	On ceramic substrate (Solderring Land 2mm×2mm)	-	-	75	°C/W
		On glass-epoxy substrate (Solderring Land 6mm×6mm)	-	-	150	
	Rth(j-l)	Junction to read of cathode sic	-	-	30	

Marking

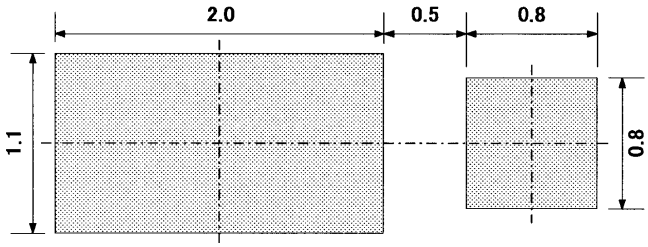
Following Indicates the Data of Manufacture





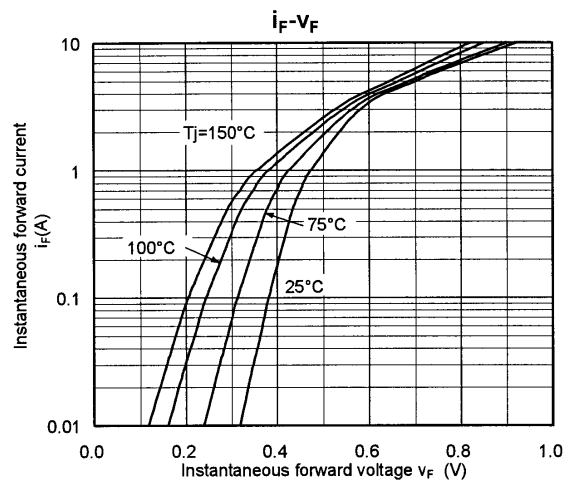
Standard Soldering Pad

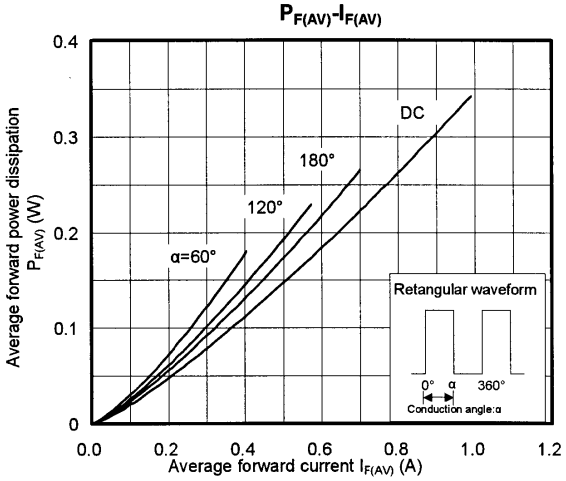
Unit in mm

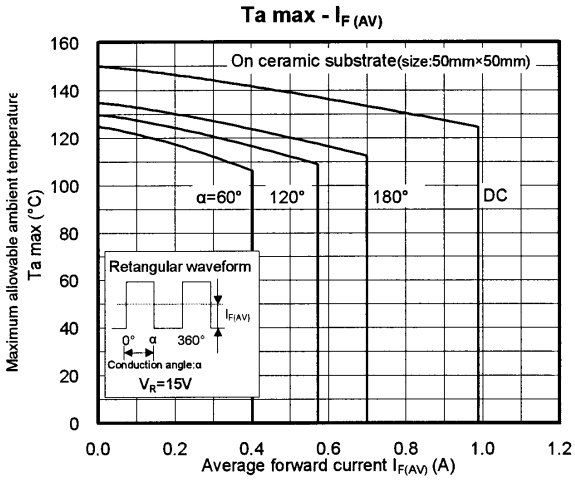


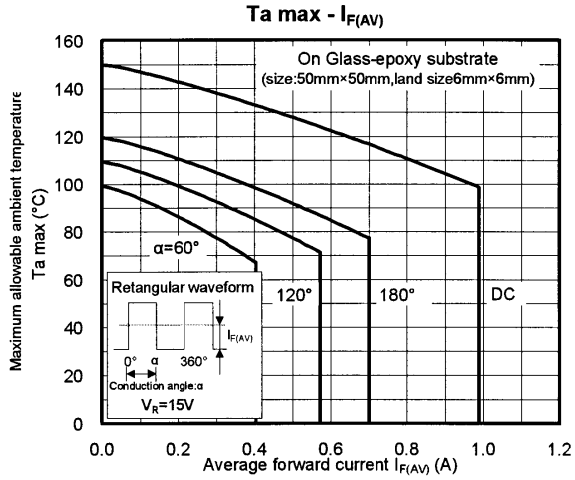
Handling Precaution

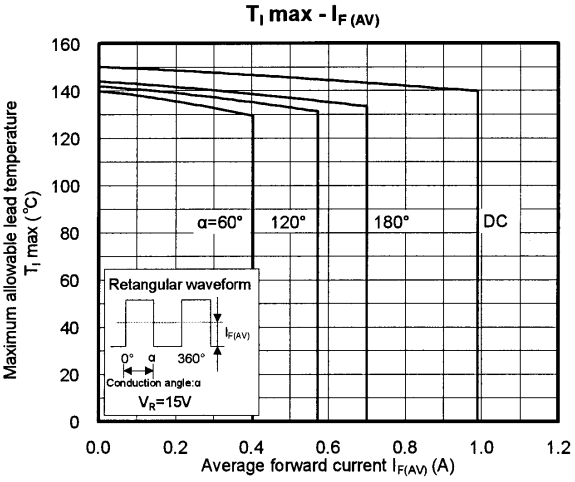
Schottky barrier diodes are having large-reverse-current-leakage characteristic compare to the other rectifier products.This current leakage and not proper operating temperature or voltage may cause thermal runaway. Please take forward and reverse loss into consideration when you design.

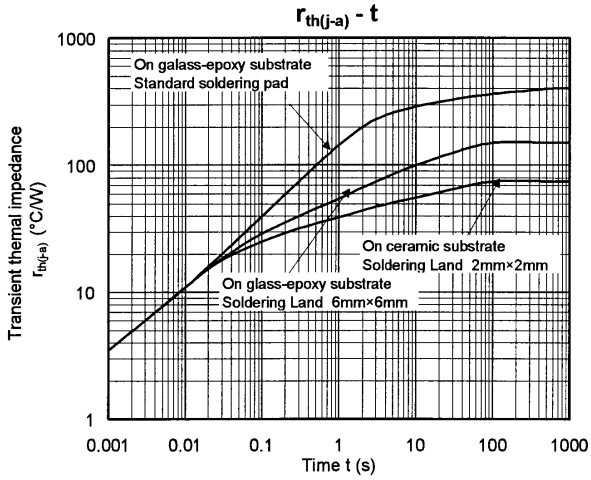

i_F-v_F
Tj=150°C
75°C
100°C
25°C
Instantaneous forward current i_F (A)
Instantaneous forward voltage v_F (V)
10
1
0.1
0.01
0.0
0.2
0.4
0.6
0.8
1.0

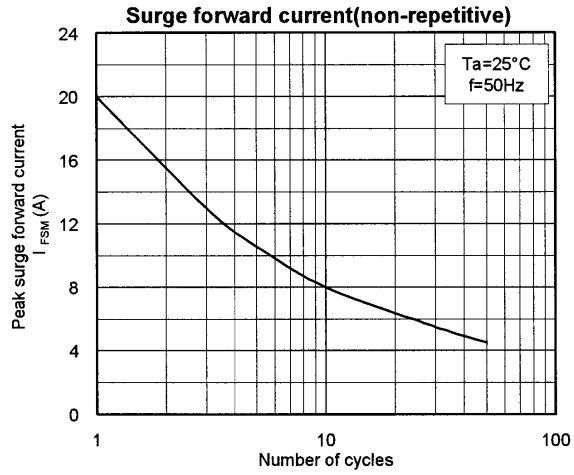

$P_{F(AV)}$-$I_{F(AV)}$
DC
180°
120°
α=60°
Retangular waveform
0° α 360°
Conduction angle:α
Average forward power dissipation $P_{F(AV)}$ (W)
Average forward current $I_{F(AV)}$ (A)
0.4
0.3
0.2
0.1
0
0.0
0.2
0.4
0.6
0.8
1.0
1.2

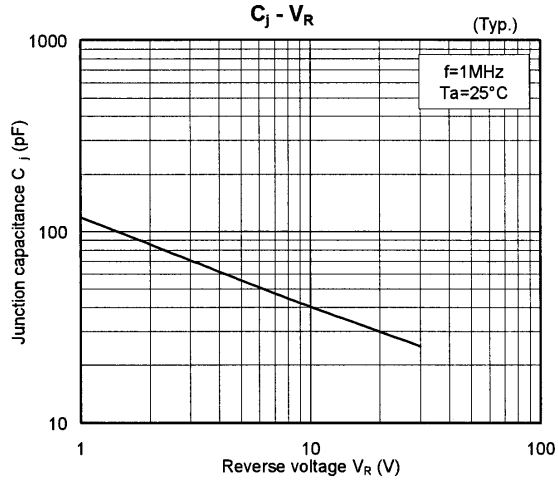

Ta max - $I_{F(AV)}$
On ceramic substrate(size:50mm×50mm)
α=60°
120°
180°
DC
Retangular waveform
$I_{F(AV)}$
0° α 360°
Conduction angle:α
V_R=15V
Maximum allowable ambient temperature Ta max (°C)
Average forward current $I_{F(AV)}$ (A)
160
140
120
100
80
60
40
20
0
0.0
0.2
0.4
0.6
0.8
1.0
1.2

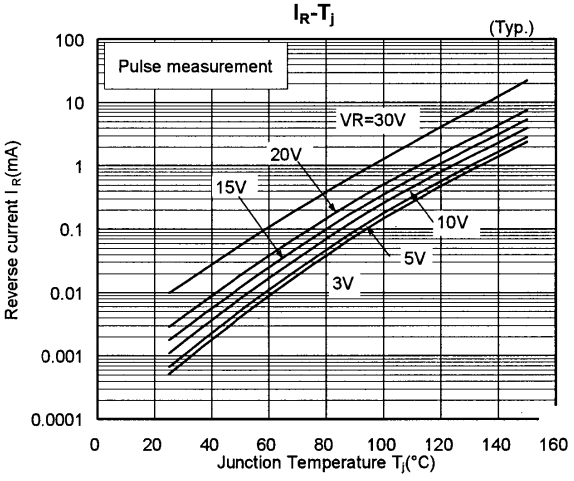

Ta max - $I_{F(AV)}$
On Glass-epoxy substrate
(size:50mm×50mm,land size6mm×6mm)
α=60°
120°
180°
DC
Retangular waveform
$I_{F(AV)}$
0° α 360°
Conduction angle:α
V_R=15V
Maximum allowable ambient temperature Ta max (°C)
Average forward current $I_{F(AV)}$ (A)
160
140
120
100
80
60
40
20
0
0.0
0.2
0.4
0.6
0.8
1.0
1.2

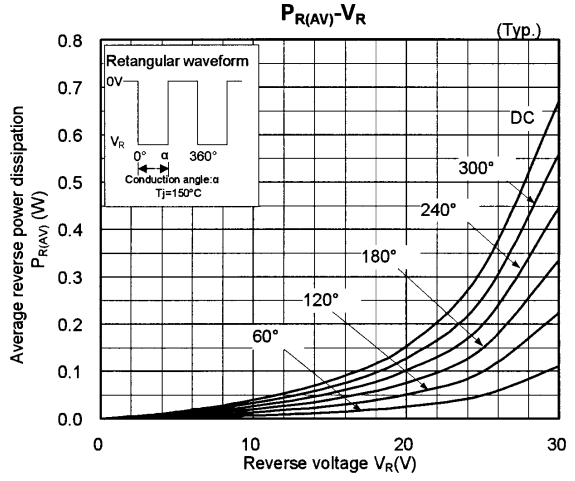

T_l max - $I_{F(AV)}$
α=60°
120°
180°
DC
Retangular waveform
$I_{F(AV)}$
0° α 360°
Conduction angle:α
V_R=15V
Maximum allowable lead temperature T_l max (°C)
Average forward current $I_{F(AV)}$ (A)
160
140
120
100
80
60
40
20
0
0.0
0.2
0.4
0.6
0.8
1.0
1.2


$r_{th(j-a)}$ - t
On galass-epoxy substrate
Standard soldering pad
On ceramic substrate
Soldering Land 2mm×2mm
On glass-epoxy substrate
Soldering Land 6mm×6mm
Transient themal impedance $r_{th(j-a)}$ (°C/W)
Time t (s)
1000
100
10
1
0.001
0.01
0.1
1
10
100
1000


Surge forward current(non-repetitive)
Ta=25°C
f=50Hz
Peak surge forward current
I FSM (A)
Number of cycles
24
20
16
12
8
4
0
1
10
100


Cj - VR
(Typ.)
f=1MHz
Ta=25°C
Junction capacitance C j (pF)
Reverse voltage VR (V)
1000
100
10
1
10
100


IR-Tj
(Typ.)
Pulse measurement
VR=30V
20V
15V
10V
5V
3V
Reverse current IR(mA)
Junction Temperature Tj(°C)
100
10
1
0.1
0.01
0.001
0.0001
0
20
40
60
80
100
120
140
160


PR(AV)-VR
(Typ.)
Retangular waveform
0V
VR
0°
α
360°
Conduction angle:α
Tj=150°C
DC
300°
240°
180°
120°
60°
Average reverse power dissipation
PR(AV) (W)
Reverse voltage VR(V)
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
10
20
30

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