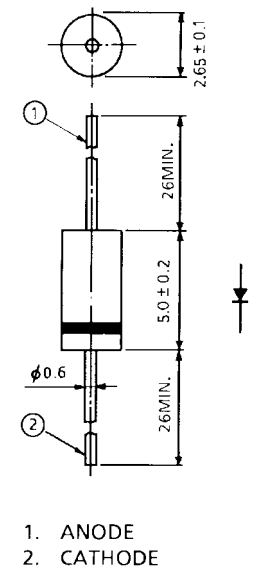
TOSHIBA FAST RECOVERY RECTIFIER SILICON DIFFUSED TYPE

05NH45

SWITCHING MODE POWER SUPPLY APPLICATIONS

- Repetitive Peak Reverse Voltage : V_{RRM} = 1000V
- Average Forward Current : $I_{F\ (AV)}$ = 0.5A
- Very Fast Reverse−Recovery Time : t_{rr} = 200ns (Max)

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	3−3E1A

Weight: 0.225g

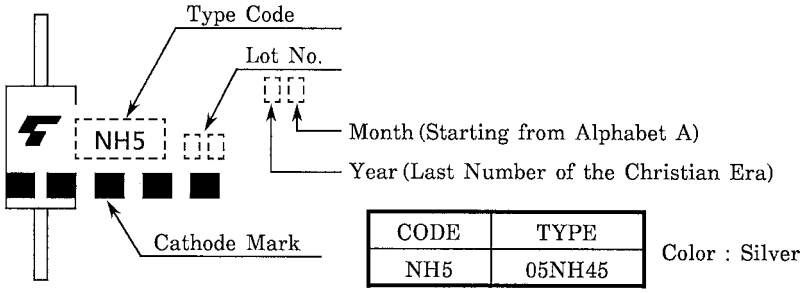
MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Reverse Voltage	V_{RRM}	1000	V
Average Forward Current (Ta = 25°C)	$I_{F\ (AV)}$	0.5	A
Peak One Cycle Surge Forward Current (Non−Repetitive)	I_{FSM}	20 (50Hz)	A
		22 (60Hz)	
Junction Temperature Range	T_j	−40~150	°C
Storage Temperature Range	T_{stg}	−40~150	°C

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

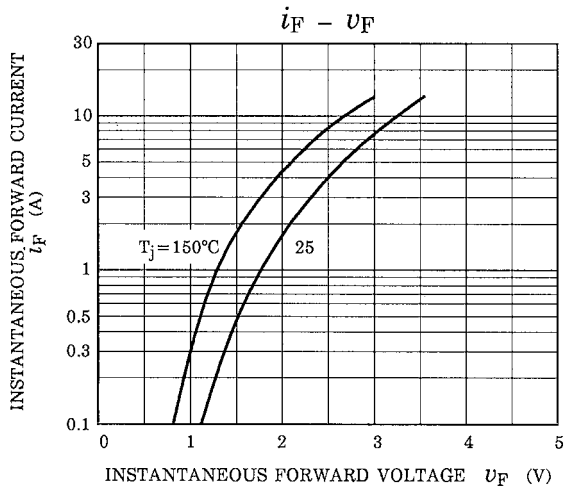
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Peak Forward Voltage	V_{FM}	I_{FM} = 0.5A	—	—	1.5	V
Repetitive Peak Reverse Current	I_{RRM}	V_{RRM} = 1000V	—	—	100	μA
Reverse Recovery Time	t_{rr}	I_F = 1A, di / dt = −30A / μs	—	—	200	ns
Forward Recovery Time	t_{fr}	I_F = 1.0A	—	—	750	ns
Thermal Resistance	$R_{th\ (j-a)}$	Junction to Ambient	—	—	75	°C / W

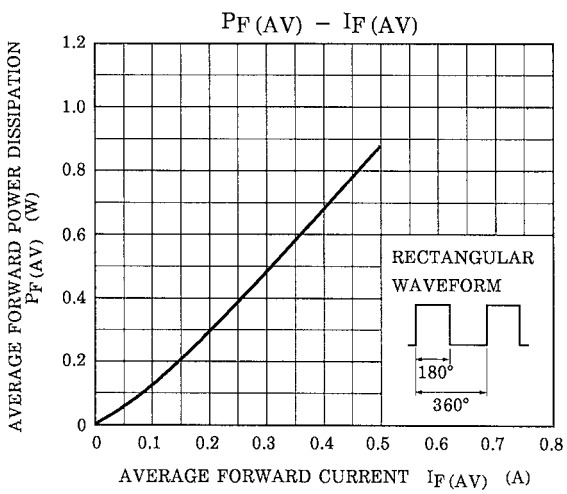
MARKING

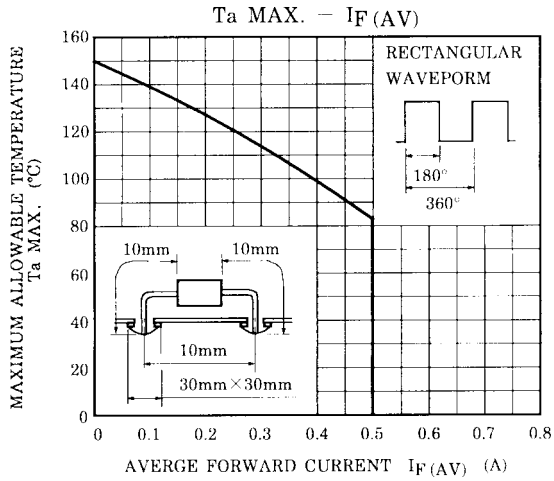


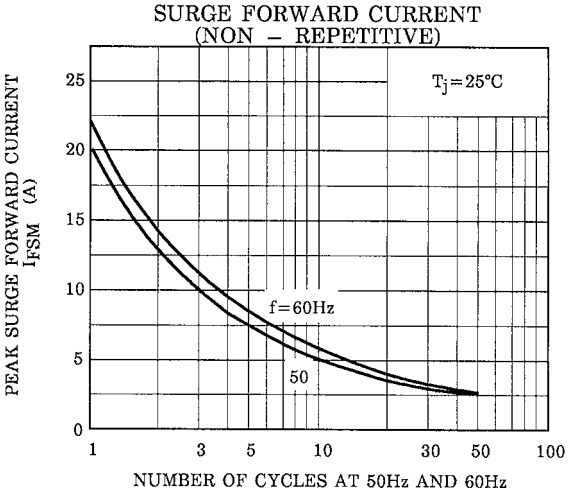
CODE	TYPE
NH5	05NH45

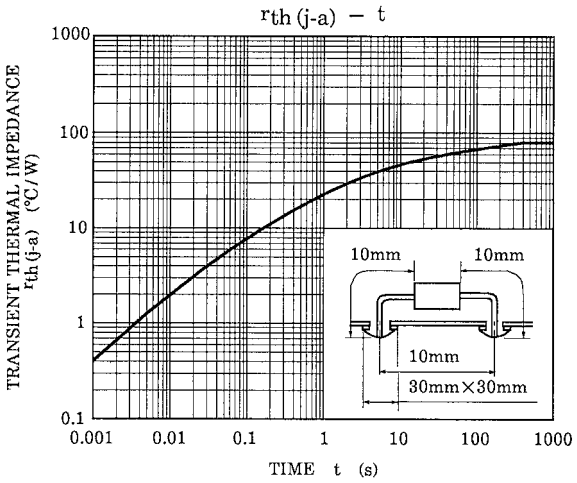
Color : Silver

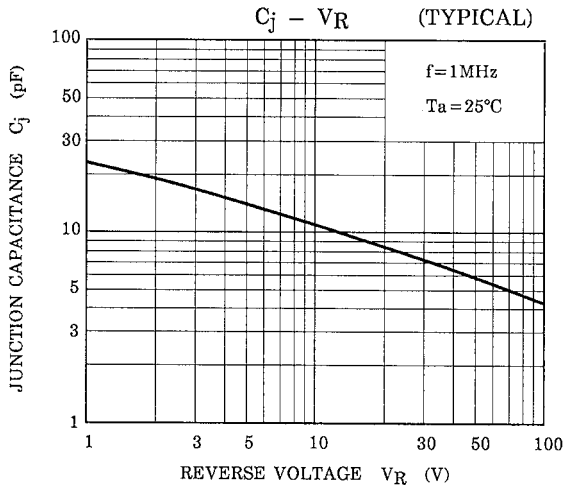

i_F – v_F
INSTANTANEOUS FORWARD CURRENT i_F (A)
30
10
5
3
1
0.5
0.3
0.1
T_j=150°C
25
0
1
2
3
4
5
INSTANTANEOUS FORWARD VOLTAGE v_F (V)


$P_{F(AV)}$ – $I_{F(AV)}$
AVERAGE FORWARD POWER DISSIPATION $P_{F(AV)}$ (W)
1.2
1.0
0.8
0.6
0.4
0.2
0
RECTANGULAR WAVEFORM
180°
360°
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8
AVERAGE FORWARD CURRENT $I_{F(AV)}$ (A)


Ta MAX. – $I_{F(AV)}$
MAXIMUM ALLOWABLE TEMPERATURE Ta MAX. (°C)
160
140
120
100
80
60
40
20
0
RECTANGULAR WAVEPORM
180°
360°
10mm
10mm
10mm
30mm×30mm
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8
AVERGE FORWARD CURRENT $I_{F(AV)}$ (A)


SURGE FORWARD CURRENT (NON – REPETITIVE)
PEAK SURGE FORWARD CURRENT I_{FSM} (A)
25
20
15
10
5
0
T_j=25°C
f=60Hz
50
1 3 5 10 30 50 100
NUMBER OF CYCLES AT 50Hz AND 60Hz


$r_{th(j-a)}$ – t
TRANSIENT THERMAL IMPEDANCE $r_{th(j-a)}$ (°C/W)
1000
100
10
1
0.1
10mm
10mm
10mm
30mm×30mm
0.001 0.01 0.1 1 10 100 1000
TIME t (s)


C_j – V_R (TYPICAL)
JUNCTION CAPACITANCE C_j (pF)
100
50
30
10
5
3
1
f=1MHz
Ta=25°C
1 3 5 10 30 50 100
REVERSE VOLTAGE V_R (V)

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000707EAA

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