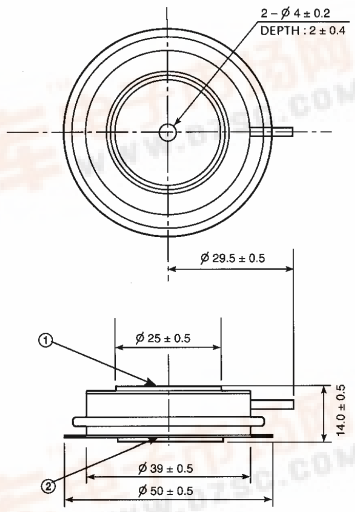
TOSHIBA FAST RECOVERY DIODE SILICON DIFFUSED TYPE

300EXH22

HIGH SPEED RECTIFIER APPLICATIONS

Unit in mm

- Repetitive Peak Reverse Voltage : V_{RRM} = 2500V
- Average Forward Current : $I_{F(AV)}$ = 300A
- Reverse Recovery Time : t_{rr} = 5μs (MAX.) (T_j = 25°C)



JEDEC	—
EIAJ	—
TOSHIBA	3-51D1A

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Reverse Voltage	V_{RRM}	2500	V
Non-Repetitive Peak Reverse Voltage (Non-Repetitive ≦ 5ms, T_j = 0~125°C)	V_{RSM}	2600	V
Average Forward Current	$I_{F(AV)}$	300	A
Peak One Cycle Surge Forward Current	I_{FSM}	6000 (50Hz)	A
		6600 (60Hz)	
Junction Temperature Range	T_j	−40~125	°C
Storage Temperature Range	T_{stg}	−40~125	°C
Mounting Force	—	10.8±1.0	kN

ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION		MIN.	MAX.	UNIT
Repetitive Peak Reverse Current	I_{RRM}	V_{RRM} = 2500V, T_j = 125°C		—	50	mA
Peak Forward Voltage	V_{RM}	I_{FM} = 1000A, T_j = 25°C		—	1.75	V
Reverse Recovery Time	t_{rr}	I_F = 300A, di_F/dt = 50A/μs	T_j = 25°C	—	5.0	μs
			T_j = 125°C	—	7.0	
Thermal Resistance (Junction to Fin)	$R_{th(j-f)}$	DC		—	0.05	°C/W

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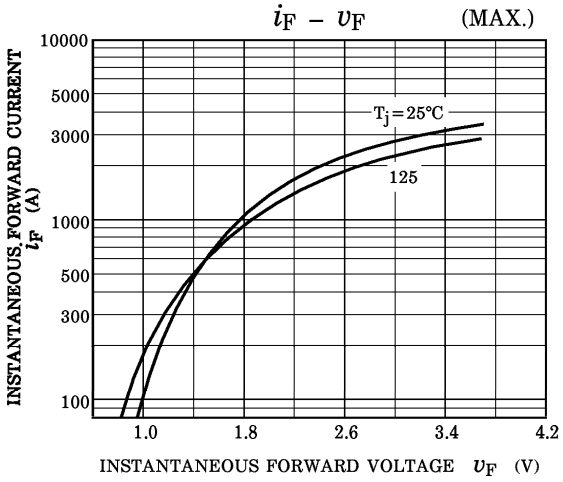
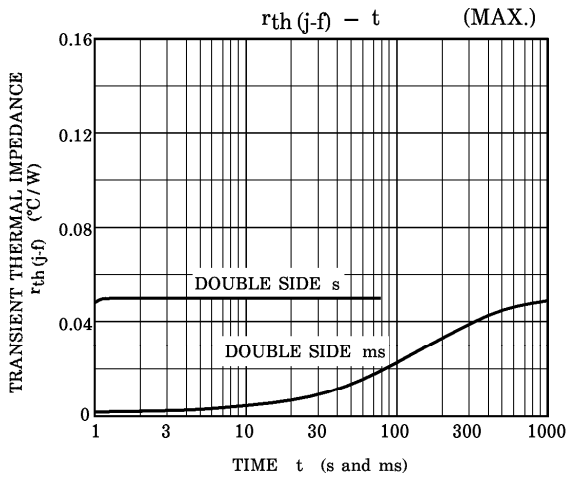
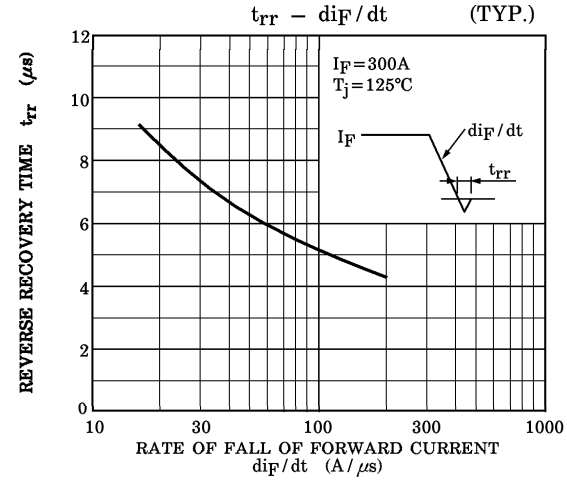
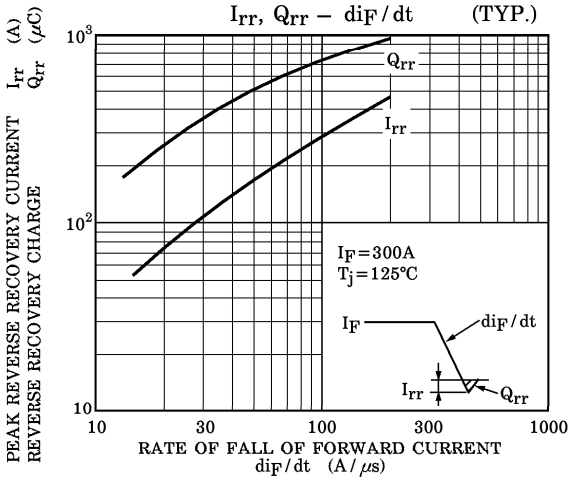

i_F – v_F (MAX.)
INSTANTANEOUS FORWARD CURRENT i_F (A)
10000
5000
3000
1000
500
300
100
T_j=25°C
125
1.0
1.8
2.6
3.4
4.2
INSTANTANEOUS FORWARD VOLTAGE v_F (V)


$r_{th\,(j\text{-}f)}$ – t (MAX.)
TRANSIENT THERMAL IMPEDANCE $r_{th\,(j\text{-}f)}$ (°C/W)
0.16
0.12
0.08
0.04
0
DOUBLE SIDE s
DOUBLE SIDE ms
1
3
10
30
100
300
1000
TIME t (s and ms)


t_{rr} – di_F/dt (TYP.)
REVERSE RECOVERY TIME t_{rr} (μs)
12
10
8
6
4
2
0
I_F=300A
T_j=125°C
I_F
di_F/dt
t_{rr}
10
30
100
300
1000
RATE OF FALL OF FORWARD CURRENT
di_F/dt (A/μs)


I_{rr}, Q_{rr} – di_F/dt (TYP.)
PEAK REVERSE RECOVERY CURRENT I_{rr} (A)
REVERSE RECOVERY CHARGE Q_{rr} (μC)
10^3
10^2
10
Q_{rr}
I_{rr}
I_F=300A
T_j=125°C
I_F
di_F/dt
I_{rr}
Q_{rr}
10
30
100
300
1000
RATE OF FALL OF FORWARD CURRENT
di_F/dt (A/μs)