

TENTATIVE

TOSHIBA INSULATED GATE BIPOLAR TRANSISTOR

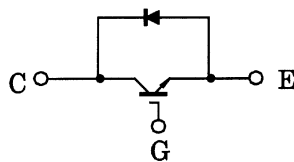
ST1000EX21

HIGH POWER SWITCHING APPLICATIONS

MOTOR CONTROL APPLICATIONS

- All Electric contacts by Pressure Structure and Airtight Package
- Anti-Parallel Fast Recovery Diode in This Package
- Enhancement Mode IGBT

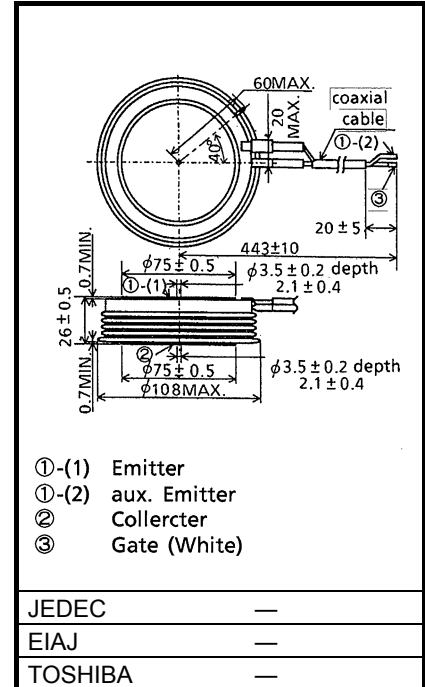
EQUIVALENT CIRCUIT



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Emitter Voltage	V_{CES}	2500	V
Gate-Emitter Voltage	V_{GES}	± 20	V
Collector Current	DC	I_C	1000
	1ms	I_{CP}	2000
Forward Current	DC	I_F	1000
	1ms	I_{FM}	2000
Collector Power Dissipation (Tc = 25°C)	P_C	5550	W
Operating Junction Temperature	T_j	-20~125	°C
Storage Temperature Range	T_{stg}	-40~125	°C
Mounting Force	—	31.5 \pm 3.2	kN

Unit: mm



Weight: 1250g

ELECTRICAL CHARACTERISTICS (T_c = 125°C without R_{th})

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Gate Leakage Current		I _{GES}	V _{GE} = ±20V, V _{CE} = 0V	—	—	±1	μA
Collector Cut-Off Current		I _{CES}	V _{CE} = 2500V, V _{GE} = 0V	—	—	200	mA
Gate-Emitter Cut-Off Voltage		V _{GE (off)}	V _{CE} = 5V, I _C = 1A	3.0	4.5	6.0	V
Collector-Emitter Saturation Voltage		V _{CE (sat)}	I _C = 1000A, V _{GE} = 15V	—	5.5	6.0	V
Input Capacitance		C _{ies}	V _{CE} = 10V, V _{GE} = 0V, f = 1MHz	—	170	—	nF
Switching Times	Rise Time	t _r	Inductive load, V _{CC} = 1500V, I _C = 1000A, V _{GG} = ±15V, R _G = 5.0Ω	—	0.3	—	μs
	Turn-On Time	t _{on}		—	2.2	—	μs
	Fall Time	t _f		—	0.5	—	μs
	Turn-Off Time	t _{off}		—	1.7	—	μs
Forward Voltage of Diode		V _F	I _F = 1000A, V _{GE} = 0V	—	2.7	3.2	V
Reverse Recovery Time		t _{rr}	I _F = 1000A, V _{GG} = -15V, di / dt = 2600A / μs	—	0.6	—	μs
Thermal Resistance	Transistor Part	R _{th (j-f) E}	Junction-Emitter side	—	—	47.5	°C / kW
		R _{th (j-f) C}	Junction-Collector side	—	—	29.0	°C / kW
		R _{th (j-f) D}	Junction-double side	—	—	18.0	°C / kW
	Diode Part	R _{th (j-f) A}	Junction-Anode side	—	—	125	°C / kW
		R _{th (j-f) K}	Junction-Cathode side	—	—	70.3	°C / kW
		R _{th (j-f) D}	Junction double side	—	—	45.0	°C / kW

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20070701-EN

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