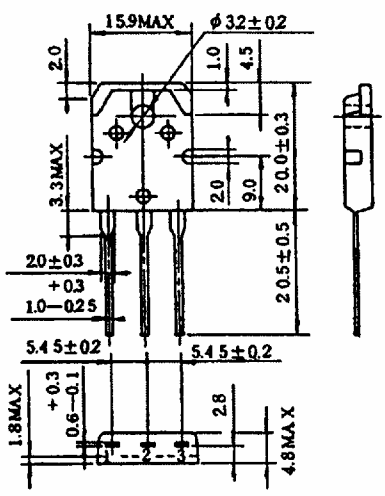
TOSHIBA

Field Effect Transistor

Silicon N Channel MOS Type (π-MOS IV)

High Speed, High Current Switching Applications

Industrial Applications **Unit in mm**



1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

JEDEC	—
EIAJ	SC-65
TOSHIBA	2-16C1B

Weight : 4.6g

Features

- Low Drain-Source ON Resistance
  - $R_{DS(ON)}$ = 0.24Ω (Typ.)
- High Forward Transfer Admittance
  - $|Y_{fs}|$ = 15S (Typ.)
- Low Leakage Current
  - I_{DSS} = -100μA (Max.) (V_{DS} = 500V)
- Enhancement-Mode
  - V_{th} = 2.0 ~ 4.0V (V_{DS} = -10V, I_D = 1mA)

Absolute Maximum Ratings (Ta = 25°C)

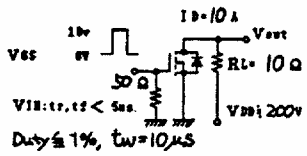
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	500	V
Drain-Gate Voltage (R_{GS} = 20kΩ)		V_{DGR}	500	V
Gate-Source Voltage		V_{GSS}	±30	V
Drain Current	DC	I_D	20	A
	Pulse	I_{DP}	80	
Drain Power Dissipation (Tc = 25°C)		P_D	150	W
Channel Temperature		T_{ch}	150	°C
Storage Temperature Range		T_{stg}	-55 ~ 150	°C

Thermal Characteristics

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	0.833	°C/W
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	50	°C/W

This transister is an electrostatic sensitive device. Please handle with caution.

Electrical Characteristics (Ta = 25C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	V_{GS} = ±25V, V_{DS} = 0V	–	–	±10	nA
Gate-Source Breakdown Voltage		$V_{(BR)\ DSS}$	I_G = ±100V, V_{DS} = 0V	±30	–	-	μA
Drain Cut-off Current		I_{DSS}	V_{DS} = 500V, V_{GS} = 0V	–	–	100	μA
Drain-Source Breakdown Voltage		$V_{(BR)\ DSS}$	I_D = 10mA, V_{GS} = 0V	500	–	–	V
Gate Threshold Voltage		V_{th}	V_{DS} = 10V, I_D = -1mA	2.0	–	4.0	V
Drain-Source ON Resistance		$R_{DS\ (ON)}$	V_{GS} = 10V, I_D = 10A	–	0.24	0.30	Ω
Forward Transfer Admittance		$\|Y_{fs}\|$	V_{DS} = 10V, I_D = 10A	10	15	–	S
Input Capacitance		C_{iss}	V_{DS} = 10V, V_{GS} = 0V, f = 1MHz	–	3000	4800	pF
Reverse Transfer Capacitance		C_{rss}		–	220	270	
Output Capacitance		C_{oss}		–	830	1200	
Switching Time	Rise Time	tr		–	25	50	ns
	Turn-on Time	t_{on}		–	60	120	
	Fall Time	tf		–	55	110	
	Turn-off Time	t_{off}		–	280	560	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	V_{DD} = 400V, V_{GS} = -10V, ID = -20A	–	65	130	nC
Gate-Source Charge		Q_{gs}		–	40	–	
Gate-Drain ("Miller") Charge		Q_{gd}		–	25	–	

Source-Drain Diode Ratings and Characteristics (Ta = 25C)

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	–	–	–	20	A
Pulse Drain Reverse Current	I_{DRP}	–	–	–	80	A
Diode Forward Voltage	V_{DSF}	I_{DR} = 20A, V_{GS} = 0V	–	-1.0	-1.7	V
Reverse Recovery Time	t_{rr}	I_{DR} = 20A, V_{GS} = 0V, dI_{DR}/dt = 100A/μs	–	450	–	ns
Reverse Recovered Charge	Q_{rr}		–	6.8	–	μC