

### Field Effect Transistor

### Silicon N Channel MOS Type ( $\pi$ -MOS II.5)

### High Speed, High Current DC-DC Converter,

### Relay Drive and Motor Drive Applications

#### Features

- Low Drain-Source ON Resistance
  - $R_{DS(ON)} = 1.1\Omega$  (Typ.)
- High Forward Transfer Admittance
  - $|Y_{fs}| = 4.0S$  (Typ.)
- Low Leakage Current
  - $I_{DSS} = 300\mu A$  (Max.) @  $V_{DS} = 720V$
- Enhancement-Mode
  - $V_{th} = 1.5 \sim 3.5V$  @  $V_{DS} = 10V, I_D = 1mA$

#### Absolute Maximum Ratings ( $T_a = 25^\circ C$ )

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	$V_{DSS}$	900	V
Drain-Gate Voltage ( $R_{GS} = 20k\Omega$ )	$V_{DGR}$	900	V
Gate-Source Voltage	$V_{GSS}$	$\pm 30$	V
Drain Current	DC	$I_D$	9
	Pulse	$I_{DP}$	27
Drain Power Dissipation ( $T_c = 25^\circ C$ )	$P_D$	150	W
Channel Temperature	$T_{ch}$	150	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55 ~ 150	$^\circ C$

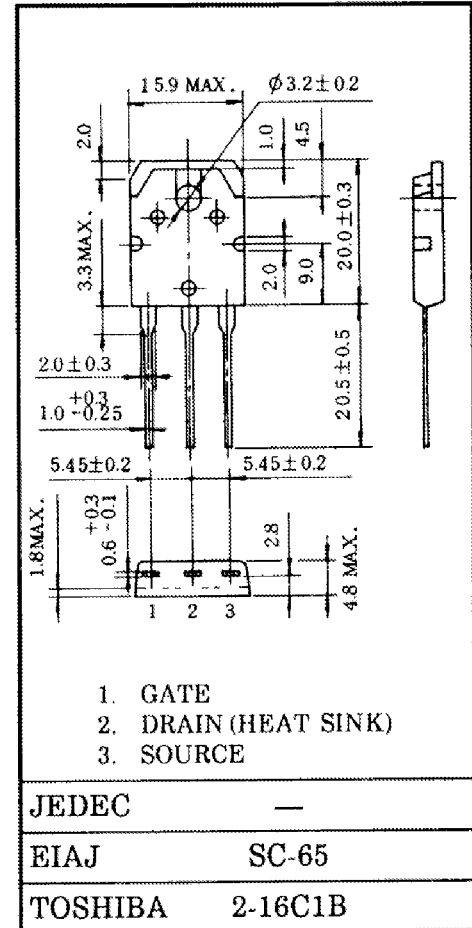
#### Thermal Characteristics

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

This transistor is an electrostatic sensitive device. Please handle with care.

### Industrial Applications

Unit in mm



Weight : 4.6g

## Electrical Characteristics (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		$I_{GSS}$	$V_{GS} = \pm 25V, V_{DS} = 0V$	–	–	$\pm 100$	nA
Drain Cut-off Current		$I_{DSS}$	$V_{DS} = 720V, V_{GS} = 0V$	–	–	300	$\mu A$
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10mA, V_{GS} = 0V$	900	–	–	V
Gate Threshold Voltage		$V_{th}$	$V_{DS} = 10V, I_D = 1mA$	1.5	–	3.5	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = 4A, V_{GS} = 10V$	–	1.1	1.4	$\Omega$
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 20V, I_D = 4A$	2.0	4.0	–	S
Input Capacitance		$C_{iss}$	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1MHz$	–	1300	1800	pF
Reverse Transfer Capacitance		$C_{rss}$		–	100	150	
Output Capacitance		$C_{oss}$		–	180	260	
Switching Time	Rise Time	$t_r$	<p><math>V_{IN} : t_r, t_f &lt; 5ns, V_{DD} = 400V</math> <math>Duty \cong 1\%, t_w = 10\mu s</math></p>	–	25	50	ns
	Turn-on Time	$t_{on}$		–	40	80	
	Fall Time	$t_f$		–	20	40	
	Turn-off Time	$t_{off}$		–	100	200	
Total Gate Charge (Gate-Source Plus Gate-Drain)		$Q_g$	$V_{DD} = 400V, V_{GS} = 10V,$ $I_D = 9A$	–	120	240	nC
Gate-Source Charge		$Q_{gs}$		–	70	–	
Gate-Drain ("Miller") Charge		$Q_{gd}$		–	50	–	

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

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	$I_{DR}$	–	–	–	9	A
Pulse Drain Reverse Current	$I_{DRP}$	–	–	–	27	A
Diode Forward Voltage	$V_{DSF}$	$I_{DR} = 9A, V_{GS} = 0V$	–	–	-2.0	V

