

### Field Effect Transistor

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

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

#### Relay Drive and Motor Drive Applications

#### Features

- 4-Volt Gate Drive
- Low Drain-Source ON Resistance
  - $R_{DS(ON)} = 0.95\Omega$  (Typ.)
- High Forward Transfer Admittance
  - $|Y_{fs}| = 4.0S$  (Typ.)
- Low Leakage Current
  - $I_{DSS} = 300\mu A$  (Max.) @  $V_{DS} = 600V$
- Enhancement-Mode
  - $V_{th} = 1.5 \sim 3.5V$  @  $V_{DS} = 10V, I_D = 1mA$

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

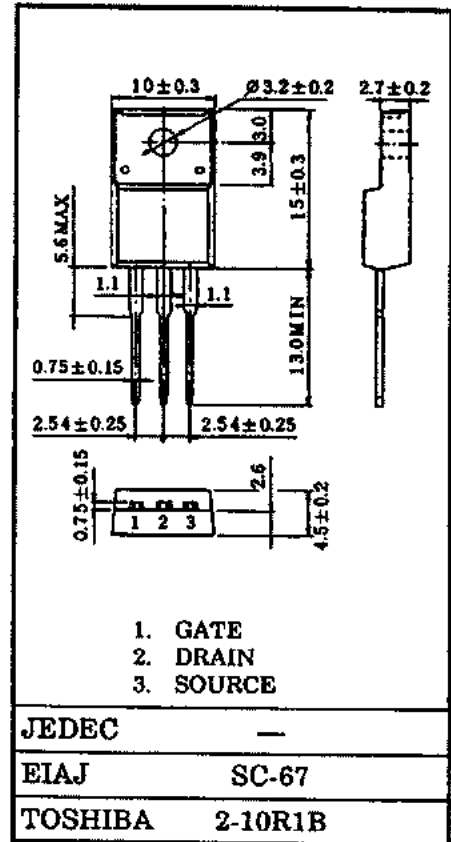
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		$V_{DSS}$	600	V
Drain-Gate Voltage ( $R_{GS} = 20k\Omega$ )		$V_{DGR}$	600	V
Gate-Source Voltage		$V_{GSS}$	$\pm 30$	V
Drain Current	DC	$I_D$	6	A
	Pulse	$I_{DP}$	24	
Drain Power Dissipation ( $T_c = 25^\circ C$ )		$P_D$	45	W
Channel Temperature		$T_{ch}$	150	$^\circ C$
Storage Temperature Range		$T_{sig}$	-55 ~ 150	$^\circ C$

#### Thermal Characteristics

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	2.77	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	62.5	$^\circ C/W$

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

#### Industrial Applications Unit in mm



Weight : 1.9g

**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		$I_{DSS}$	$V_{DS} = 600V, V_{GS} = 0V$	-	-	300	$\mu A$
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10mA, V_{GS} = 0V$	600	-	-	V
Gate Threshold Voltage		$V_{th}$	$V_{DS} = 10V, I_D = 1mA$	1.5	-	3.5	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = 3A, V_{GS} = 10V$	-	0.95	1.25	$\Omega$
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 10V, I_D = 3A$	3.0	4.0	-	S
Input Capacitance		$C_{iss}$	$V_{DS} = 10V, V_{GS} = 0V,$ $f = 1MHz$	-	1400	2000	$\mu F$
Reverse Transfer Capacitance		$C_{rss}$		-	75	120	
Output Capacitance		$C_{oss}$		-	250	380	
Switching Time	Rise Time	$t_r$	<p><math>V_{GS} 10V</math> <math>0V</math> <math>I_D = 3A</math> <math>V_{OUT}</math> <math>R_L = 100\Omega</math> <math>4.7\Omega</math> <math>V_{IN} : t_r, t_f &lt; 5ns, V_{DD} = 300V</math> <math>Duty \leq 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	$t_{off}$		-	85	170	
Total Gate Charge (Gate-Source Plus Gate-Drain)		$Q_g$	$V_{DD} = 400V, V_{GS} = 10V,$ $I_D = 6A$	-	56	110	nC
Gate-Source Charge		$Q_{gs}$		-	32	-	
Gate-Drain ("Miller") Charge		$Q_{gd}$		-	24	-	

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

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	$I_{DR}$	-	-	-	6	A
Pulse Drain Reverse Current	$I_{DRP}$	-	-	-	24	A
Diode Forward Voltage	$V_{DSF}$	$I_{DR} = 6A, V_{GS} = 0V$	-	-	-2.0	V
Reverse Recovery Time	$t_{rr}$	$I_{DR} = 6A, V_{GS} = 0V$	-	460	-	ns
Reverse Recovered Charge	$Q_{rr}$	$dI_{DR}/dt = 100A/\mu s$	-	3.5	-	$\mu C$