

Field Effect Transistor

Silicon N Channel MOS Type (π -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 ($T_a = 25^\circ C$)

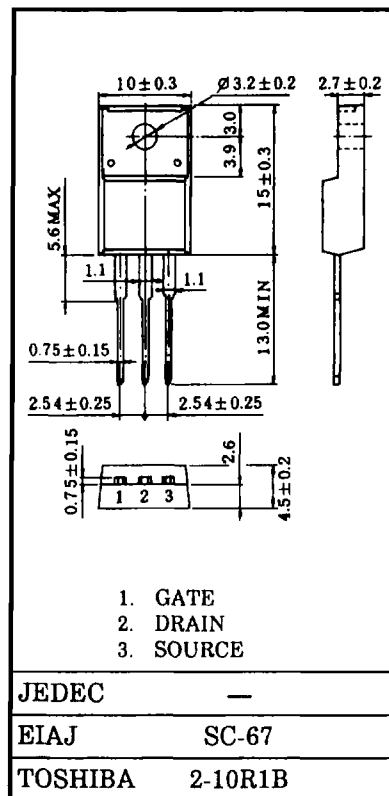
CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DS}	600	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)	V_{DGR}	600	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current	DC	I_D	6
	Pulse	I_{DP}	24
Drain Power Dissipation ($T_c = 25^\circ C$)	P_D	45	W
Channel Temperature	T_{ch}	150	$^\circ C$
Storage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



JEDEC —

EIAJ SC-67

TOSHIBA 2-10R1B

Weight : 1.9g

Electrical Characteristics (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 25V, V_{DS} = 0V$	-	-	± 100	nA
Drain Cut-off Current		I_{DSS}	$V_{DS} = 600V, V_{GS} = 0V$	-	-	300	μA
Drain-Source Breakdown Voltage		$V_{(BR)DS}$	$I_D = 10mA, V_{GS} = 0V$	600	-	-	V
Gate Threshold Voltage		V_{th}	$V_{GS} = 10V, I_D = 1mA$	1.5	-	3.5	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = 3A, V_{GS} = 10V$	-	0.95	1.25	Ω
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	pF
Reverse Transfer Capacitance		C_{rss}		-	75	120	
Output Capacitance		C_{oss}		-	250	380	
Switching Time	Rise Time	t_r	<p>$V_{GS} = 10V, 0V$ $I_D = 3A$ $R_L = 100\Omega$ 4.7Ω $V_{IN} : t_r, t_f < 5ns, V_{DD} = 300V$ $Duty \leq 1\%, t_w = 10\mu s$</p>	-	25	50	ns
	Turn-on Time	t_{on}		-	40	80	
	Fall Time	t_f		-	20	40	
	Turn-off Time	t_{of}		-	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	-	μC

