

TOSHIBA FIELD EFFECT TRANSISTOR SILICON P CHANNEL MOS TYPE (L<sup>2</sup>-π-MOSIV)

# 2SJ315

DC-DC CONVERTER

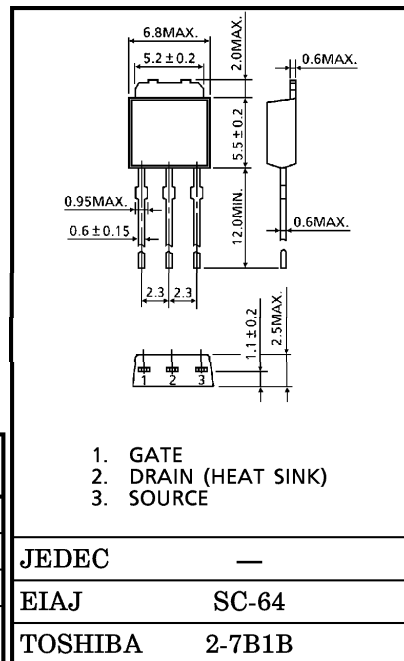
INDUSTRIAL APPLICATIONS

Unit in mm

- 4-Volt Gate Drive
- Low Drain-Source ON Resistance :  $R_{DS(ON)} = 0.25\Omega$  (Typ.)
- High Forward Transfer Admittance :  $|Y_{fs}| = 3.0S$  (Typ.)
- Low Leakage Current :  $I_{DSS} = -100\mu A$  (Max.) ( $V_{DS} = -60V$ )
- Enhancement-Mode :  $V_{th} = -0.8 \sim -2.0V$   
( $V_{DS} = -10V, I_D = -1mA$ )

MAXIMUM RATINGS (Ta = 25°C)

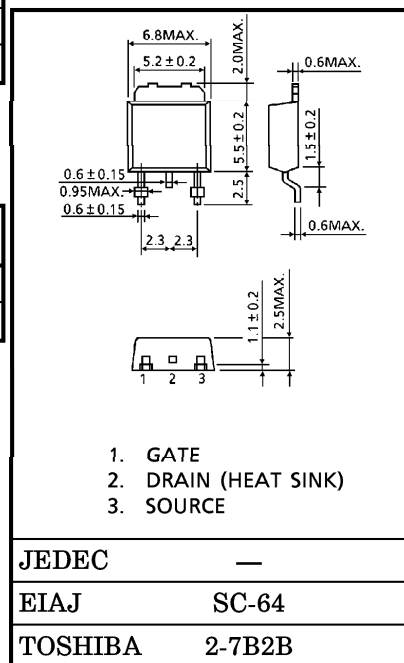
CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	$V_{DSS}$	-60	V
Drain-Gate Voltage ( $R_{GS} = 20k\Omega$ )	$V_{DGR}$	-60	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current	DC	$I_D$	-5
	Pulse	$I_{DP}$	-20
Drain Power Dissipation ( $T_c = 25^\circ C$ )	$P_D$	20	W
Channel Temperature	$T_{ch}$	150	°C
Storage Temperature Range	$T_{stg}$	-55~150	°C



THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	6.25	°C/W
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	125	°C/W

**This transistor is an electrostatic sensitive device.  
Please handle with caution.**



Weight : 0.36g

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current	$I_{GSS}$	$V_{GS} = \pm 16V, V_{DS} = 0V$	—	—	$\pm 10$	$\mu A$	
Drain Cut-off Current	$I_{DSS}$	$V_{DS} = -60V, V_{GS} = 0V$	—	—	-100	$\mu A$	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = -10mA, V_{GS} = 0V$	-60	—	—	V	
Gate Threshold Voltage	$V_{th}$	$V_{DS} = -10V, I_D = -1mA$	-0.8	—	-2.0	V	
Drain-Source ON Resistance	$R_{DS(ON)}$	$V_{GS} = -4V, I_D = -2.5A$	—	0.31	0.40	$\Omega$	
		$V_{GS} = -10V, I_D = -2.5A$	—	0.21	0.25		
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS} = -10V, I_D = -2.5A$	1.8	3.0	—	S	
Input Capacitance	$C_{iss}$	$V_{DS} = -10V, V_{GS} = 0V, f = 1MHz$	—	500	—	pF	
Reverse Transfer Capacitance	$C_{rss}$		—	90	—		
Output Capacitance	$C_{oss}$		—	290	—		
Switching Time	Rise Time	$t_r$		—	20	—	ns
	Turn-on Time	$t_{on}$		—	30	—	
	Fall Time	$t_f$		—	30	—	
	Turn-off Time	$t_{off}$		$V_{IN} : t_r, t_f < 5ns,$ $Duty \leq 1\%, t_w = 10\mu s$	—	140	
Total Gate Charge (Gate-Source Plus Gate-Drain)	$Q_g$	$V_{DD} = -48V, V_{GS} = -10V, I_D = -5A$	—	20	—	nC	
Gate-Source Charge	$Q_{gs}$		—	13	—		
Gate-Drain ("Miller") Charge	$Q_{gd}$		—	7	—		

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	$I_{DR}$	—	—	—	-5	A
Pulse Drain Reverse Current	$I_{DRP}$	—	—	—	-20	A
Diode Forward Voltage	$V_{DSF}$	$I_{DR} = -5A, V_{GS} = 0V$	—	—	1.5	V

MARKING

