

TOSHIBA FIELD EFFECT TRANSISTOR SILICON P CHANNEL MOS TYPE (L²-π-MOS V)

2SJ507

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS
 CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

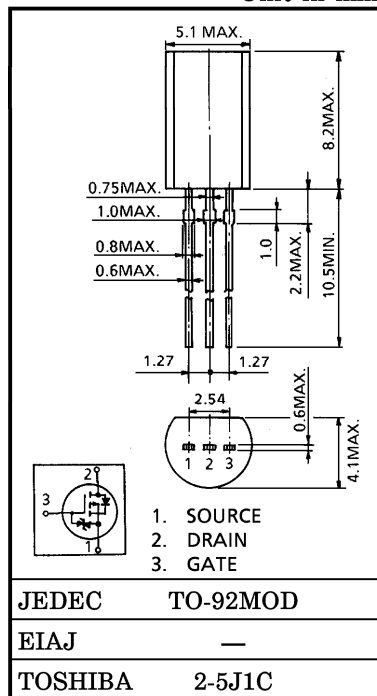
INDUSTRIAL APPLICATIONS

Unit in mm

- 4V Gate Drive
- Low Drain-Source On Resistance : $R_{DS(ON)} = 0.5\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 1.0S$ (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}	±20	V
Drain Current	DC	I_D	-1 A
	Pulse	I_{DP}	-3 A
Drain Power Dissipation (Ta=25°C)	P_D	0.9	W
Single Pulse Avalanche Energy**	E_{AS}	249.6	mJ
Avalanche Current	I_{AR}	-1	A
Repetitive Avalanche Energy*	E_{AR}	0.09	mJ
Channel Temperature	T_{ch}	150	°C
Storage Temperature Range	T_{stg}	-55~150	°C



Weight : 0.36g (Typ.)

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	138	°C/W

Note ;

- * Repetitive rating ; Pulse Width Limited by Max. junction temperature.
- ** $V_{DD} = -25V$, Starting $T_{ch} = 25^\circ C$, $L = 339mH$, $R_G = 25\Omega$, $I_{AR} = -1A$

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

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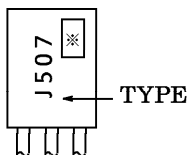
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 16V, V_{DS} = 0V$	—	—	± 10	μA	
Drain Cut-off Current	I_{DSS}	$V_{DS} = -60V, V_{GS} = 0V$	—	—	-100	μA	
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	$R_{DS(ON)}$	$V_{GS} = -4V, I_D = -0.5A$	—	0.72	1.0	Ω	
		$V_{GS} = -10V, I_D = -0.5A$	—	0.5	0.7		
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS} = -10V, I_D = -0.5A$	0.5	1.0	—	S	
Input Capacitance	C_{iss}	$V_{DS} = -10V, V_{GS} = 0V, f = 1MHz$	—	170	—	pF	
Reverse Transfer Capacitance	C_{rss}		—	25	—		
Output Capacitance	C_{oss}		—	72	—		
Switching Time	Rise Time	t_r		—	20	—	ns
	Turn-on Time	t_{on}		—	35	—	
	Fall Time	t_f		—	30	—	
	Turn-off Time	t_{off}		$V_{IN}: t_r, t_f < 5ns,$ $Duty \leq 1\%, t_w = 10\mu s$	—	135	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q_g	$V_{DD} \doteq -48V, V_{GS} = -10V, I_D = -1A$	—	5.6	—	nC	
Gate-Source Charge	Q_{gs}		—	3.9	—		
Gate-Drain ("Miller") Charge	Q_{gd}		—	1.7	—		

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	—	—	—	-1	A
Pulse Drain Reverse Current	I_{DRP}	—	—	—	-3	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = -1A, V_{GS} = 0V$	—	—	1.5	V
Reverse Recovery Time	t_{rr}	$I_{DR} = -1A, V_{GS} = 0V$	—	58	—	ns
Reverse Recovery Charge	Q_{rr}	$dI_{DR} / dt = 50A / \mu s$	—	72.5	—	nC

MARKING



※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)