

Field Effect Transistor

Silicon P Channel MOS Type (L²-π-MOS IV)

High Speed, High Current DC-DC Converter,

Relay Drive and Motor Drive Applications

Features

- 4-Volt Gate Drive
- Low Drain-Source ON Resistance
 - $R_{DS(ON)} = 0.04\Omega$ (Typ.)
- High Forward Transfer Admittance
 - $|Y_{fs}| = 20S$ (Typ.)
- Low Leakage Current
 - $I_{DSS} = -100\mu A$ (Max.) @ $V_{DS} = -60V$
- Enhancement-Mode
 - $V_{th} = -0.8 \sim -2.0V$ @ $V_{DS} = -10V, I_D = -1mA$

Absolute Maximum Ratings (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DS}	-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	-20
	Pulse	I_{DP}	-80
Drain Power Dissipation ($T_c = 25^\circ C$)	P_D	100	W
Channel Temperature	T_{ch}	150	°C
Storage Temperature Range	T_{stg}	-55 ~ 150	°C

Thermal Characteristics

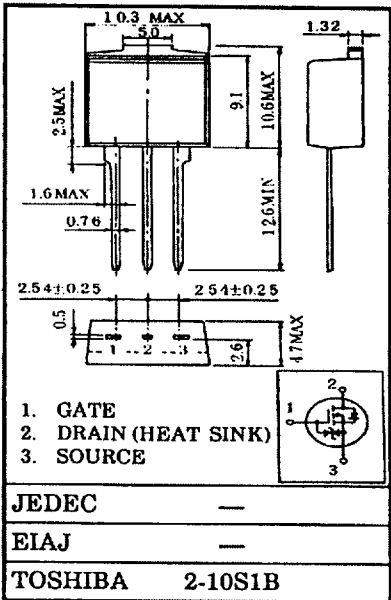
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	1.25	°C/W
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	83.3	°C/W

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

Industrial Applications

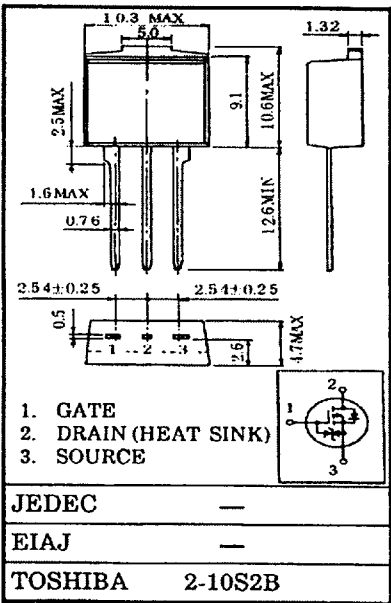
TO-220FL

Unit in mm



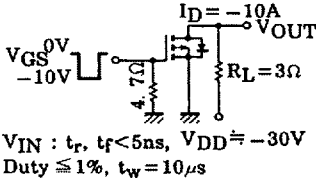
TO-220SM

Unit in mm



Weight : 1.5g

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	$R_{DS(ON)}$	$V_{GS} = -4V, I_{DS} = -10A$	—	58	90	Ω
		$V_{GS} = -10V, I_{DS} = -10A$	—	35	45	
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS} = -10V, I_{DS} = -10A$	12	20	—	S
Input Capacitance	C_{iss}	$V_{DS} = -10V, V_{GS} = 0V,$ $f = 1MHz$	—	3000	3800	pF
Reverse Transfer Capacitance	C_{rss}		—	500	900	
Output Capacitance	C_{oss}		—	1500	2200	
Switching Time	Rise Time	 $V_{GS} = 0V, -10V$ $I_D = -10A$ V_{OUT} $R_L = 3\Omega$ $V_{IN} : t_r, t_f < 5ns, V_{DD} = -30V$ Duty $\leq 1\%, t_w = 10\mu s$	—	20	40	ns
	Turn-on Time		—	50	100	
	Fall Time		—	70	140	
	Turn-off Time		—	180	360	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q_g	$V_{DD} = -48V, V_{GS} = -10V,$ $I_D = -20A$	—	120	240	nC
Gate-Source Charge	Q_{gs}		—	80	—	
Gate-Drain ("Miller") Charge	Q_{gd}		—	40	—	

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

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	—	—	—	-20	A
Pulse Drain Reverse Current	I_{DRP}	—	—	—	-80	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = -20A, V_{GS} = 0V$	—	—	1.7	V
Reverse Recovery Time	t_{rr}	$I_{DR} = -20A, V_{GS} = 0V$ $dI_{DR}/dt = 100A/\mu s$	—	120	—	ns
Reverse Recovered Charge	Q_{rr}		—	0.36	—	μC

