

Field Effect Transistor

Silicon N Channel MOS Type (t-MOS III.5)

High Speed, High Current Switching Applications

Features

- Low Drain-Source ON Resistance
 - $R_{DS(ON)} = 0.55\Omega$ (Typ.)
- High Forward Transfer Admittance
 - $|Y_{fs}| = 5.6S$ (Typ.)
- Low Leakage Current
 - $I_{DSS} = 300\mu A$ (Max.) ($V_{DS} = 500V$)
- Enhancement-Mode
 - $V_{th} = 2.0 \sim 4.0V$ @ $V_{DS} = 10V$, $I_D = 1mA$

Absolute Maximum Ratings (Ta = 25C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DS}	500	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)	V_{DGR}	500	V
Gate-Source Voltage	V_{GS}	± 30	V
Drain Current	DC	12	A
	Pulse	48	
Drain Power Dissipation ($T_c = 25^\circ C$)	P_D	100	W
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature	T_{stg}	-55 ~ 150	$^\circ C$

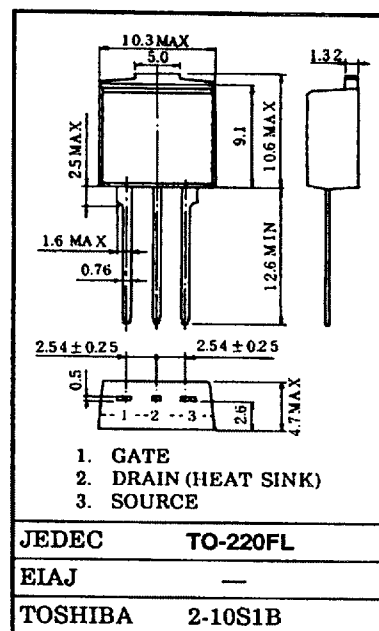
Thermal Characteristics

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

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

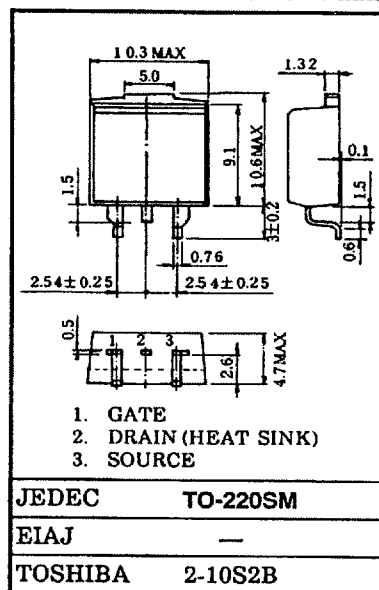
Industrial Applications

Unit in mm



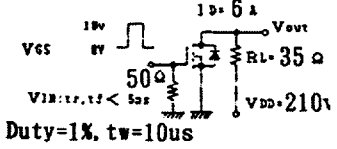
TO-220SM

Unit in mm



Weight : 1.5g

Electrical Characteristics (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 30V, V_{DS} = 0V$	—	—	± 100	nA
Drain Cut-off Current	I_{DSS}	$V_{DS} = 500V, V_{GS} = 0V$	—	—	300	μA
Drain-Source Breakdown Voltage	$V_{(BR) DSS}$	$I_D = 10mA, V_{GS} = 0V$	500	—	—	V
Gate Threshold Voltage	V_{th}	$V_{DS} = 10V, I_D = 1mA$	2.0	—	4.0	V
Drain-Source ON Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 6A$	—	0.55	0.70	Ω
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS} = 10V, I_D = 6A$	4.0	5.6	—	S
Input Capacitance	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V,$ $f = 1MHz$	—	1100	1700	pF
Reverse Transfer Capacitance	C_{rss}		—	120	150	
Output Capacitance	C_{oss}		—	310	440	
Switching Time	Rise Time	 $V_{GS} = 10V$ $I_D = 6A$ $R_L = 35\Omega$ $V_{DD} = 210V$ $Duty = 1\%, t_w = 10\mu s$	—	45	90	ns
	Turn-on Time		—	90	180	
	Fall Time		—	50	100	
	Turn-off Time		—	140	280	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q_g	$V_{DD} = 400V, V_{GS} = -10V,$ $I_D = 12A$	—	40	55	nC
Gate-Source Charge	Q_{gs}		—	15	—	
Gate-Drain ("Miller") Charge	Q_{gd}		—	25	—	

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

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	—	—	—	12	A
Pulse Drain Reverse Current	I_{DRP}	—	—	—	48	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 12A, V_{GS} = 0V$	—	—	-1.7	V
Reverse Recovery Time	t_r	$I_{DR} = 12A, V_{GS} = 0V$	—	400	—	ns
Reverse Recovered Charge	Q_r	$dI_{DR}/dt = 100A/\mu s$	—	4.4	—	μC

