

Field Effect Transistor

Industrial Applications

Unit in mm

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

High Speed, High Current DC-DC Converter,

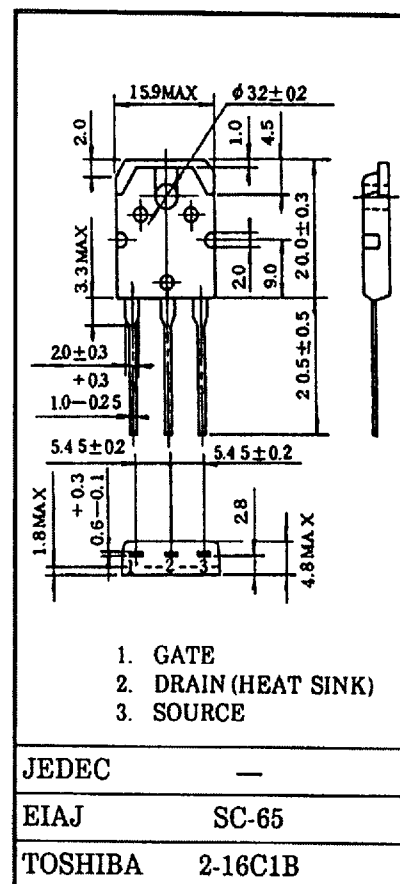
Relay Drive and Motor Drive Applications

Features

- Low Drain-Source ON Resistance
 - $R_{DS(ON)} = 0.38\Omega$ (Typ.)
- High Forward Transfer Admittance
 - $|Y_{fs}| = 7.0S$ (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 = 25°C)

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	I_b	15
	Pulse	I_{bP}	60
Drain Power Dissipation (Tc = 25°C)	P_D	150	W
Channel Temperature	T_{ch}	150	°C
Storage Temperature Range	T_{stg}	-55 ~ 150	°C



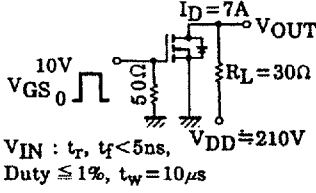
Weight : 4.6g

Thermal Characteristics

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$\theta_{(ch-c)}$	0.833	°C/W
Thermal Resistance, Channel to Ambient	$\theta_{(ch-a)}$	50	°C/W

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

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}	$V_{DS} = 500V, V_{GS} = 0V$	—	—	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		$r_{DS(ON)}$	$I_D = 7A, V_{GS} = 10V$	—	0.38	0.45	Ω
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 10V, I_D = 7A$	6.0	7.0	—	S
Input Capacitance		C_{iss}	$V_{DS} = 10V, V_{GS} = 0V,$ $f = 1MHz$	—	1480	2300	pF
Reverse Transfer Capacitance		C_{rss}		—	240	300	
Output Capacitance		C_{oss}		—	400	550	
Switching Time	Rise Time	t_r	 $I_D = 7A$ V_{OUT} $R_L = 30\Omega$ $V_{DD} = 210V$ $V_{IN} : t_r, t_f < 5ns,$ $Duty \leq 1\%, t_w = 10\mu s$	—	90	180	ns
	Turn-on Time	t_{on}		—	120	240	
	Fall Time	t_f		—	110	220	
	Turn-off Time	t_{off}		—	250	500	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} = 400V, V_{GS} = 10V,$ $I_D = 15A$	—	60	75	nC
Gate-Source Charge		Q_{gs}		—	25	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	35	—	

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

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	—	—	—	15	A
Pulse Drain Reverse Current	I_{DRP}	—	—	—	60	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 15A, V_{GS} = 0V$	—	—	-1.7	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 15A, V_{GS} = 0V$	—	750	—	ns
Reverse Recovered Charge	Q_{rr}	$dI_{DR}/dt = 100A/\mu s$	—	5.6	—	μC

