

Field Effect Transistor

Silicon N Channel MOS Type (π -MOS II)

High Speed, High Current DC-DC Converter,

Chopper Regulator, Relay Drive and

Motor Drive Applications

Features

- Low Drain-Source ON Resistance
 - $R_{DS(ON)} = 0.18\Omega$ (Typ.)
- High Forward Transfer Admittance
 - $|Y_{fs}| = 6S$ (Typ.)
- Low Leakage Current
 - $I_{DSS} = 300\mu A$ (Max.) @ $V_{DS} = 250V$
- Enhancement-Mode
 - $V_{th} = 1.5 \sim 3.5V$ @ $V_{DS} = 10V, I_D = 1mA$

Absolute Maximum Ratings (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	250	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	250	V
Gate-Source Voltage		V_{GSS}	± 30	V
Drain Current	DC	I_D	20	A
	Pulse	I_{DP}	80	
Drain Power Dissipation ($T_c = 25^\circ C$)		P_D	150	W
Channel Temperature		T_{ch}	150	$^\circ C$
Storage Temperature Range		T_{slg}	-55 ~ 150	$^\circ C$

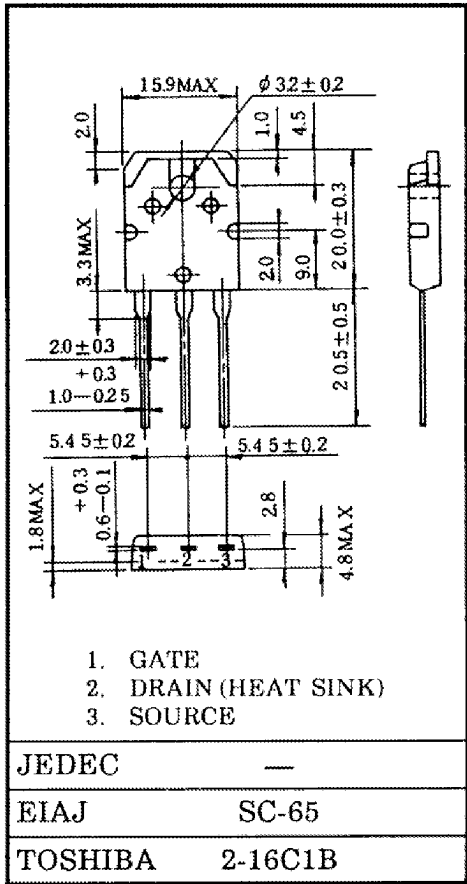
Thermal Characteristics

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

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

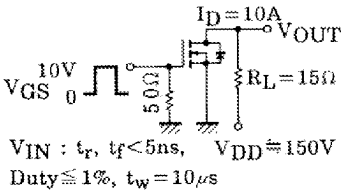
Industrial Applications

Unit in mm



Weight : 4.6g

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}	$V_{DS} = 250V, V_{GS} = 0V$	—	—	300	μA
Drain-Source Breakdown Voltage		$V_{(BR) DSS}$	$I_D = 10mA, V_{GS} = 0V$	250	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS} = 10V, I_D = 1mA$	1.5	—	3.5	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = 10A, V_{GS} = 10V$	—	0.18	0.23	Ω
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 10V, I_D = 10A$	4.0	7.0	—	S
Input Capacitance		C_{iss}	$V_{DS} = 10V, V_{GS} = 0V,$ $f = 1MHz$	—	2100	3000	pF
Reverse Transfer Capacitance		C_{rss}		—	200	300	
Output Capacitance		C_{oss}		—	620	1000	
Switching Time	Rise Time	t_r	 $I_D = 10A$ V_{OUT} $10V$ 0 50Ω 50Ω $R_L = 15\Omega$ $V_{IN} : t_r, t_f < 5ns, V_{DD} \approx 150V$ $Duty \leq 1\%, t_w = 10\mu s$	—	120	240	ns
	Turn-on Time	t_{on}		—	150	300	
	Fall Time	t_f		—	130	260	
	Turn-off Time	t_{off}		—	350	700	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} = 250V, V_{GS} = 10V,$ $I_D = 20A$	—	76	152	nC
Gate-Source Charge		Q_{gs}		—	38	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	38	—	

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}	$I_{DR} = 20A, V_{GS} = 0V$	—	—	-1.6	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 20A, V_{GS} = 0V$	—	185	—	ns
Reverse Recovered Charge	Q_{rr}	$dI_{DR}/dt = 60A/\mu s$	—	1.2	—	μC

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