

Silicon N Channel MOS Type (τ - MOS IV)

High Speed, High Current Switching Applications.
Chopper Regulator, DC-DC Converter and Motor Drive Applications.

- Low Drain-Source ON Resistance: $r_{DS(ON)} = 0.6\Omega$ (Typ.)
- High Forward Transfer Admittance: $|Y_{fs}| = 6.9S$ (Typ.)
- Low Leakage Current: $I_{BSS} = 100\mu A$ (Max.) ($V_{DS} = 500V$)
- Enhancement Mode: $V_{th} = 2.0 \sim 4.0V$ ($V_{DS} = 10V$, $I_D = 1mA$)

Maximum Ratings ($T_a = 25^\circ C$)

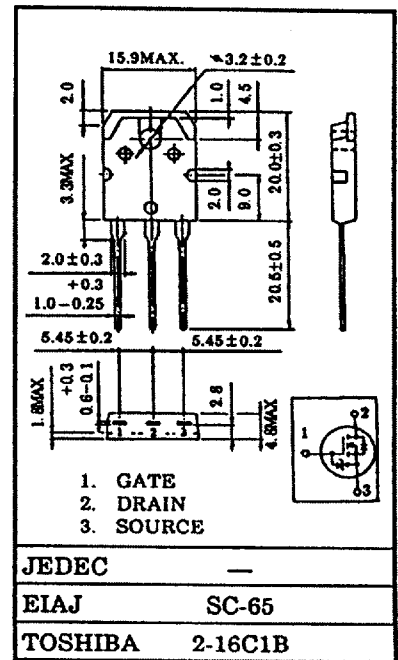
Characteristic		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	500	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	500	V
Gate-Source Voltage		V_{GSS}	± 30	V
Drain Current	DC	I_D	10	A
	Pulse	I_{DP}	40	A
Drain Power Dissipation ($T_c = 25^\circ C$)		P_D	125	W
Channel Temperature		T_{ch}	150	$^\circ C$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^\circ C$

Thermal Characteristics

Characteristic	Symbol	Max.	Unit
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	1.0	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	50	$^\circ C/W$

This transistor is an electrostatic sensitive device.
Please Handle With Caution.

Unit in mm

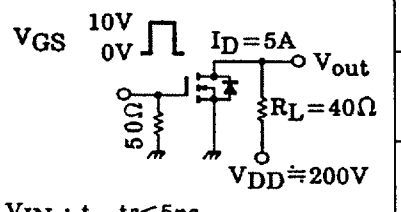


Weight : 4.6g

The information contained here is subject to change without notice.

The information contained herein is presented only as guide for the applications of our products. No responsibility is assumed by TOSHIBA for any infringements of patents or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of TOSHIBA or others. These TOSHIBA products are intended for usage in general electronic equipments (office equipment, communication equipment, measuring equipment, domestic electrification, etc.) Please make sure that you consult with us before you use these TOSHIBA products in equipments which require high quality and/or reliability, and in equipments which could have major impact to the welfare of human life (atomic energy control, spaceship, traffic signal, combustion control, all types of safety devices, etc.). TOSHIBA cannot accept liability to any damage which may occur in case these TOSHIBA products were used in the mentioned equipments without prior consultation with TOSHIBA.

Electrical Characteristics ($T_J = 25^\circ\text{C}$)

Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 25\text{V}, V_{DS} = 0\text{V}$	—	—	± 10	μA
Gate-Source Breakdown Voltage		$V_{(BR)GSS}$	$I_G = \pm 100\text{ }\mu\text{A}, V_{DS} = 0\text{V}$	± 30	—	—	—
Drain Cut-Off Current		I_{DSS}	$V_{DS} = 500\text{V}, V_{GS} = 0\text{V}$	—	—	100	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10\text{ mA}, V_{GS} = 0\text{V}$	500	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS} = 10\text{V}, I_D = 1\text{ mA}$	2.0	—	4.0	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$V_{GS} = 10\text{V}, I_D = 5\text{A}$	—	0.6	0.8	Ω
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 10\text{V}, I_D = 5\text{A}$	4.5	6.9	—	S
Input Capacitance		C_{iss}	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}$ $f = 1\text{ MHz}$ 	—	1240	—	pF
Reverse Transfer Capacitance		C_{rss}		—	100	—	
Output Capacitance		C_{oss}		—	380	—	
Switching Timing	Rise Time	t_r		—	12	—	ns
	Turn-on Time	t_{on}	$V_{IN} : t_r, t_f < 5\text{ns}$ $\text{Duty} \leq 1\%, t_w = 10\mu\text{s}$	—	45	—	
	Fall Time	t_f		—	20	—	
	Turn-off Time	t_{off}		—	120	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} = 400\text{V}, V_{GS} = 10\text{V}$ $I_D = 10\text{A}$	—	30	—	nC
Gate-Source Charge		Q_{gs}		—	20	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	10	—	

Source-Drain Diode Ratings and Characteristics ($T_J = 25^\circ\text{C}$)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Continuous Drain Reverse Current	I_{DR}	—	—	—	10	A
Pulse Drain Reverse Current	I_{DRP}	—	—	—	40	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 10\text{A}, V_{GS} = 0\text{V}$	—	—	—1.7	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 10\text{A}, V_{GS} = 0\text{V}$	—	450	—	ns
Reverse Recovery Charge	Q_{rr}	$dI_{DR} / dt = 100\text{A} / \mu\text{s}$	—	4.0	—	μC

