

Field Effect Transistor

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

High Speed, High Current DC-DC Converter,

Relay Drive and Motor Drive Applications

Features

- Low Drain-Source ON Resistance
 - $R_{DS(ON)} = 0.15\Omega$ (Typ.)
- High Forward Transfer Admittance
 - $|Y_{fs}| = 21S$ (Typ.)
- Low Leakage Current
 - $I_{DSS} = 300\mu A$ (Max.) @ $V_{DS} = 500V$
- Enhancement-Mode
 - $V_{th} = 1.5 \sim 3.5V$ @ $V_{DS} = 10V, I_D = 1mA$

Absolute Maximum Ratings (Ta = 25°C)

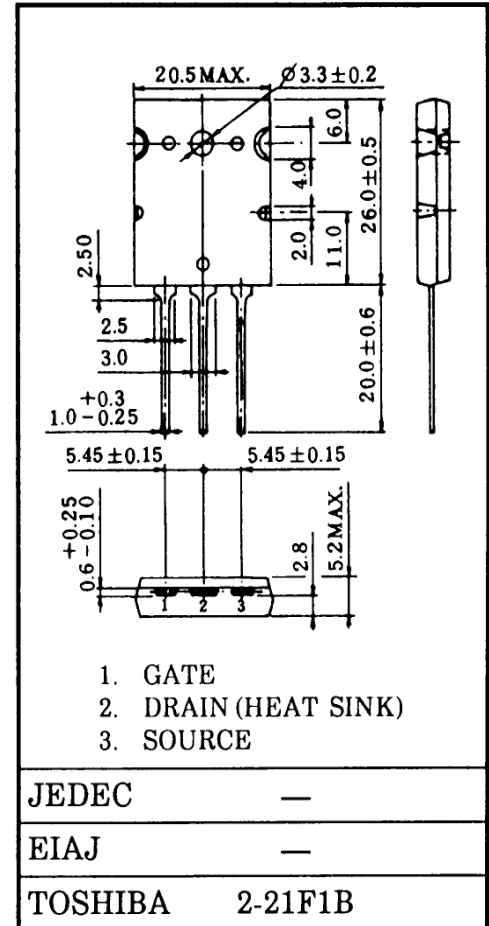
CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DSS}	500	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)	V_{DGR}	500	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current	DC	I_D	25
	Pulse	I_{DP}	100
Drain Power Dissipation ($T_c = 25^\circ C$)	P_D	200	W
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature Range	T_{stg}	-55 ~ 150	$^\circ C$

Thermal Characteristics

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	0.625	$^\circ C/W$
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	35.7	$^\circ C/W$

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

Industrial Applications Unit in mm



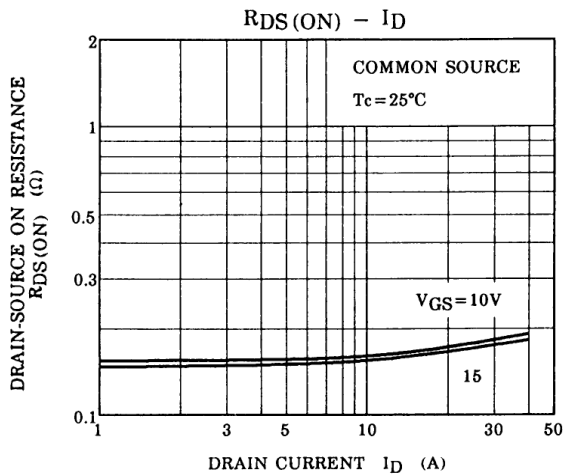
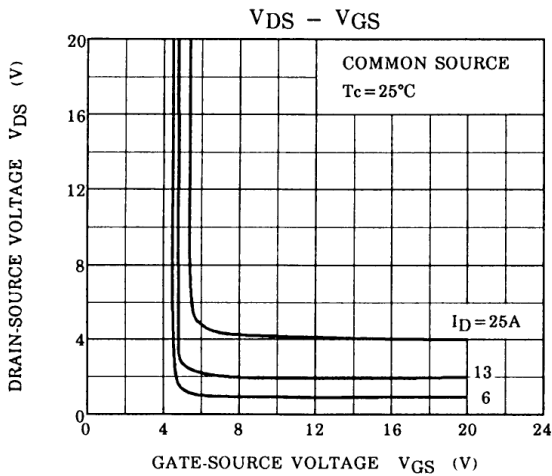
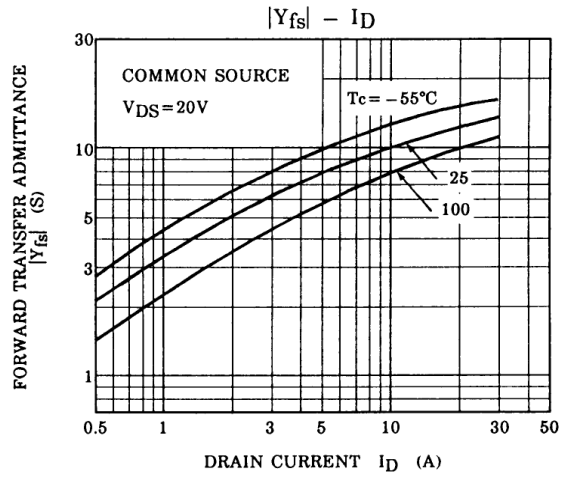
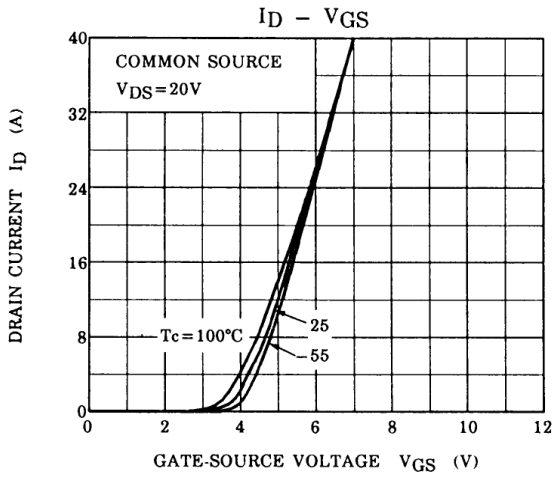
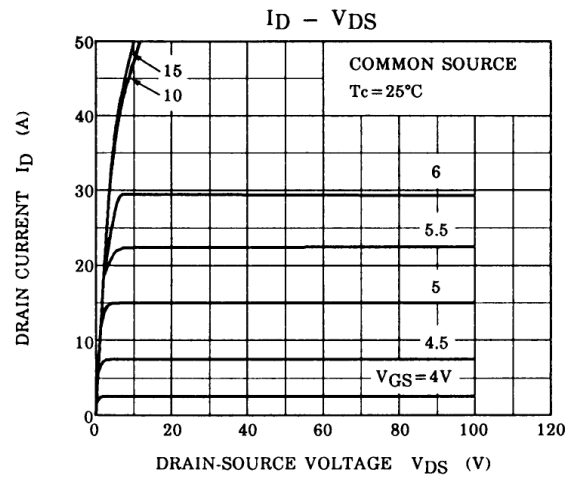
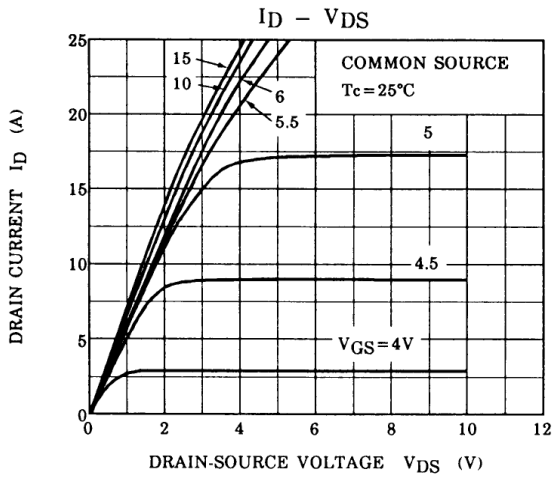
Weight : 9.75g

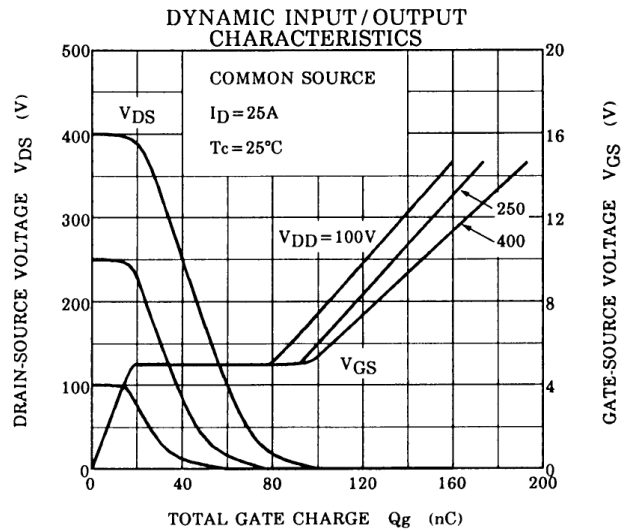
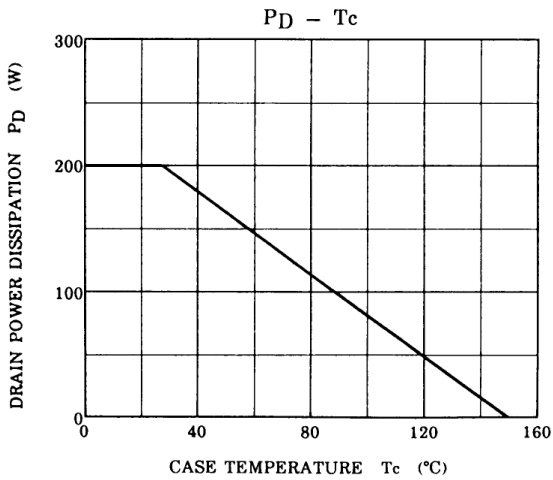
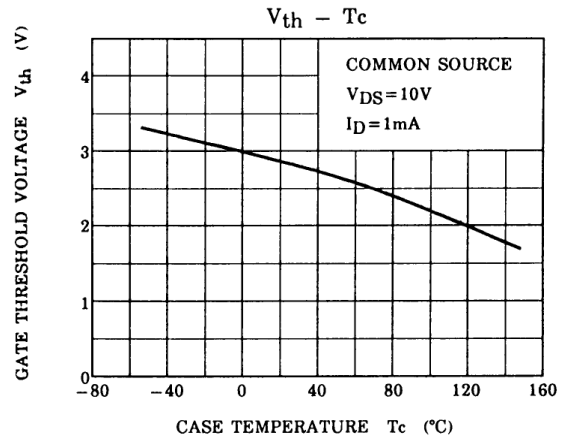
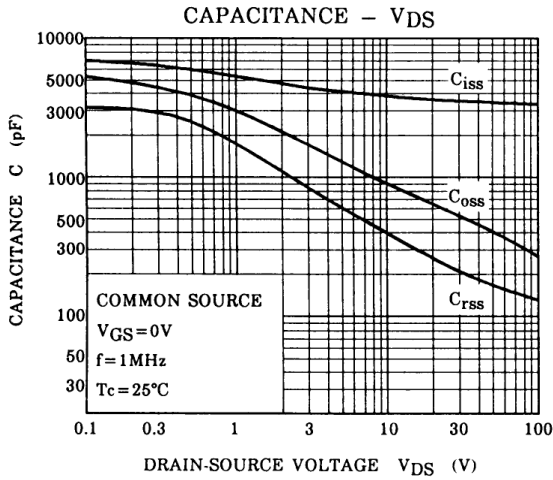
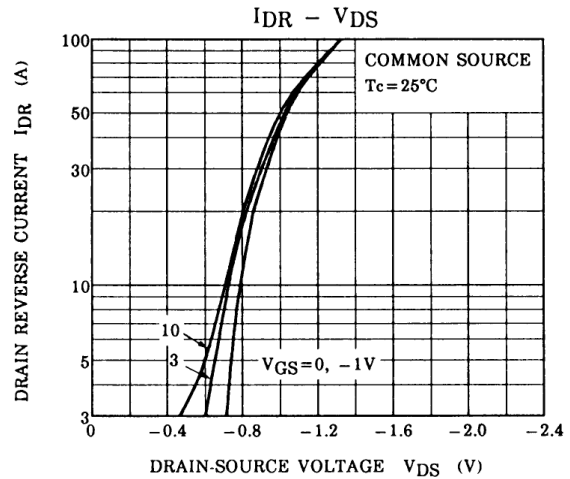
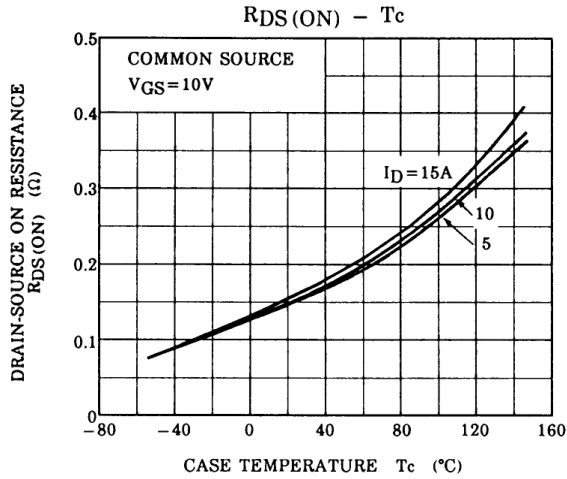
Electrical Characteristics (Ta = 25°C)

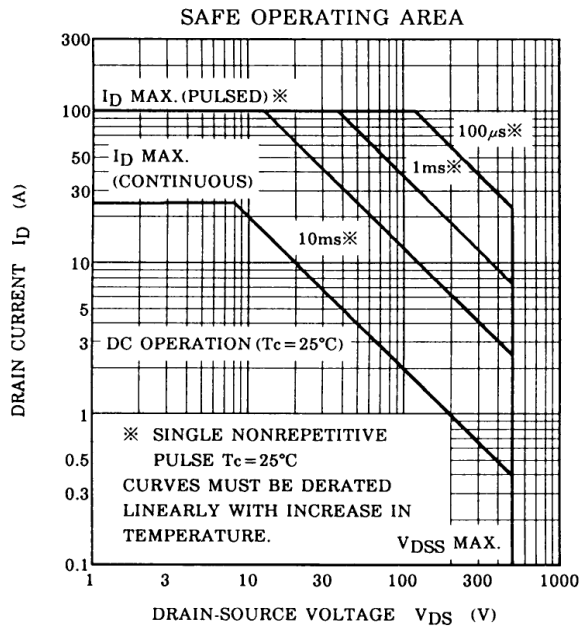
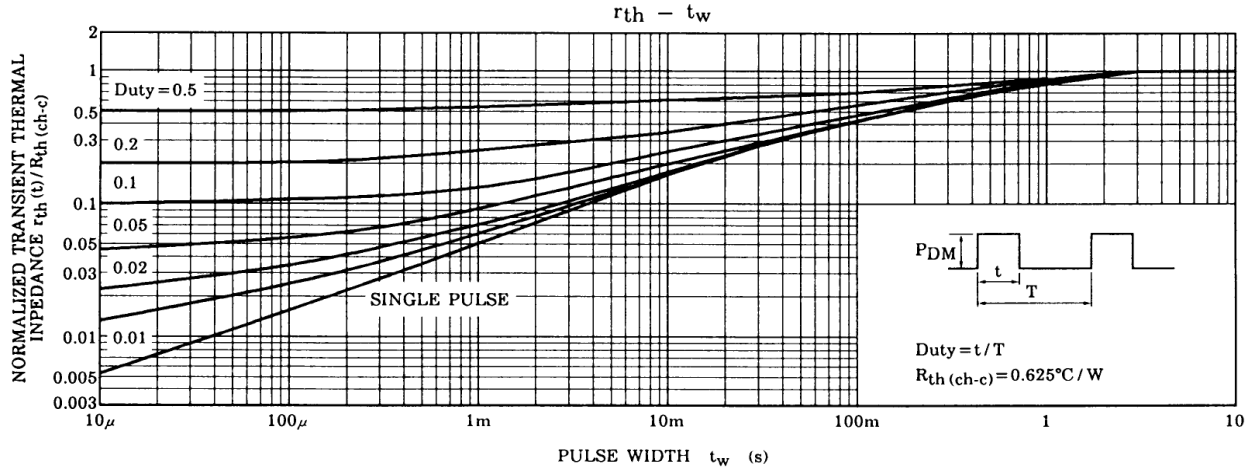
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 25V, V_{DS} = 0V$	–	–	± 100	nA
Drain Cut-off Current		I_{DSS}	$V_{DS} = 500V, V_{GS} = 0V$	–	–	300	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10mA, V_{GS} = 0V$	500	–	–	V
Gate Threshold Voltage		V_{th}	$V_{DS} = 10V, I_D = 1mA$	1.5	–	3.5	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = 13A, V_{GS} = 10V$	–	0.15	0.20	Ω
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 10V, I_D = 13A$	10	21	–	S
Input Capacitance		C_{iss}	$V_{DS} = 10V, V_{GS} = 0V,$ $f = 1MHz$	–	3700	5000	pF
Reverse Transfer Capacitance		C_{rss}		–	400	750	
Output Capacitance		C_{oss}		–	920	1300	
Switching Time	Rise Time	t_r	<p>$V_{IN} : t_r, t_f < 5ns, V_{DD} = 200V$ $Duty \leq 1\%, t_w = 10\mu s$</p>	–	185	370	ns
	Turn-on Time	t_{on}		–	240	480	
	Fall Time	t_f		–	250	500	
	Turn-off Time	t_{off}		–	590	1180	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} = 400V, V_{GS} = 10V,$ $I_D = 25A$	–	150	250	nC
Gate-Source Charge		Q_{gs}		–	70	–	
Gate-Drain ("Miller") Charge		Q_{gd}		–	80	–	

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

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	–	–	–	25	A
Pulse Drain Reverse Current	I_{DRP}	–	–	–	100	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 25A, V_{GS} = 0V$	–	–	-1.6	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 25A, V_{GS} = 0V$	–	780	–	ns
Reverse Recovered Charge	Q_{rr}	$dI_{DR}/dt = 100A/\mu s$	–	9.8	–	μC







Notes

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.