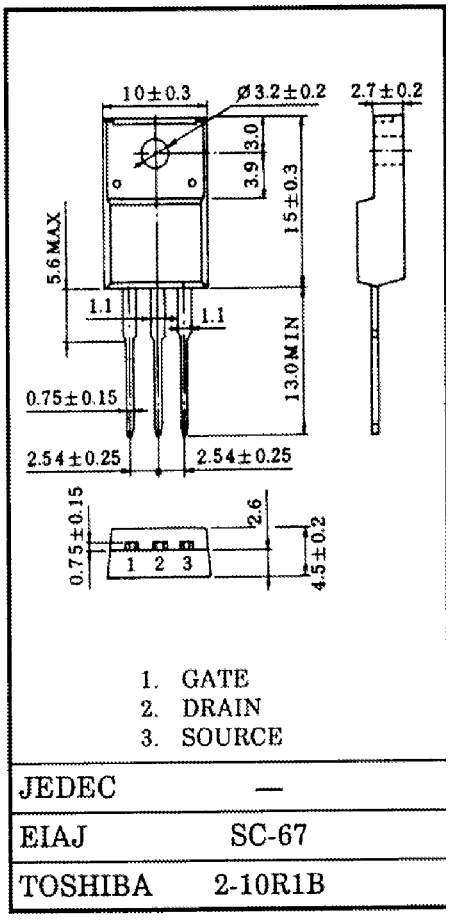
Field Effect Transistor

Silicon N Channel MOS Type (π-MOS II)

High Speed, High Current DC-DC Converter, Relay Drive and Motor Drive Applications

Industrial Applications **Unit in mm**



JEDEC	—
EIAJ	SC-67
TOSHIBA	2-10R1B

Weight : 1.9g

Features

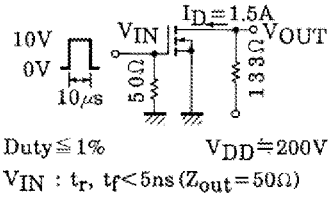
- High Voltage
  - $V_{(BR)DSS}$ = 900V
- High Forward Transfer Admittance
  - $|Y_{fs}|$ = 1.0S (Typ.) @I_D = 1.5A
- Low Leakage Current
  - I_{DSS} = 300μA (Max.) @ V_{DS} = 900V
- Enhancement-Mode

Absolute Maximum Ratings (Ta = 25°C)

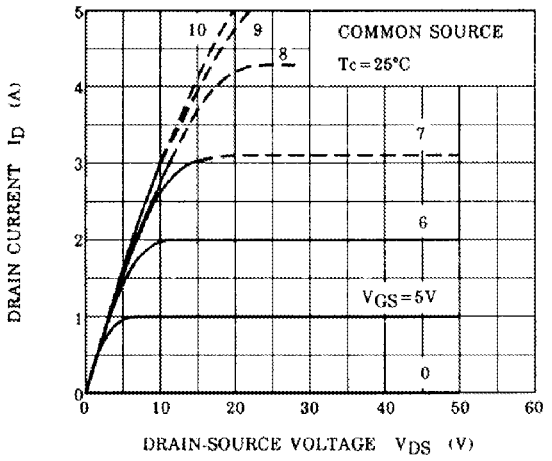
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	900	V
Gate-Source Voltage		V_{GSS}	±30	V
Drain Current	DC	I_D	3	A
	Pulse	I_{DP}	5	
Drain Power Dissipation (Tc = 25°C)		P_D	40	W
Channel Temperature		T_{ch}	150	°C
Storage Temperature Range		T_{stg}	-55 ~ 150	°C

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

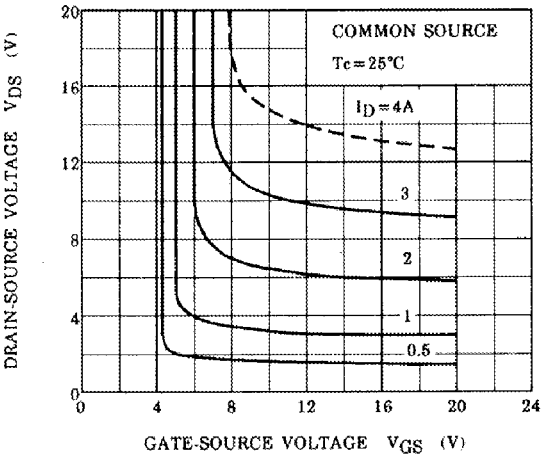
Electrical Characteristics (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	V_{GS} = ±25V, V_{DS} = 0V	–	–	±100	nA
Drain Cut-off Current		I_{DSS}	V_{DS} = 900V, V_{GS} = 0V	–	–	300	μA
Drain-Source Breakdown Voltage		$V_{(BR)\ DSS}$	I_D = 10mA, V_{GS} = 0V	900	–	–	V
Gate Threshold Voltage		V_{th}	V_{DS} = 10V, I_D = 1mA	1.5	–	3.5	V
Drain-Source Resistance		$R_{DS\ (ON)}$	I_D = 1.5A , V_{GS} = 10V,	–	3.3	4.3	Ω
Forward Transfer Admittance		$\|Y_{fs}\|$	V_{DS} = 10V, I_D = 1.5A	0.5	1.0	–	S
Input Capacitance		C_{iss}	V_{DS} = 25V, V_{GS} = 0V, f = 1MHz	–	800	1100	pF
Reverse Transfer Capacitance		C_{rss}		–	70	120	
Output Capacitance		C_{oss}		–	120	200	
Switching Time	Rise Time	t_r		–	55	120	ns
	Turn-on Time	t_{on}		–	70	165	
	Fall Time	t_f		–	60	120	
	Turn-off Time	t_{off}		–	280	550	

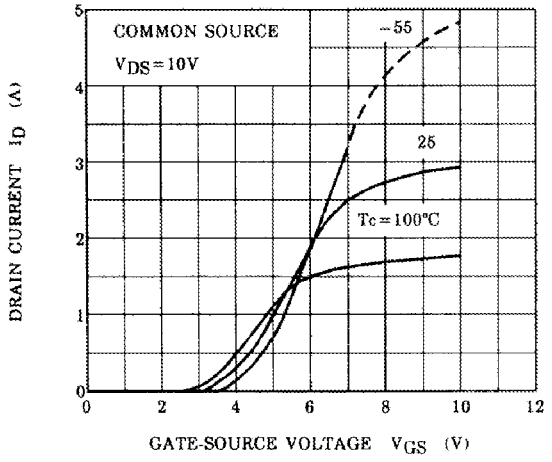
I_D – V_{DS}



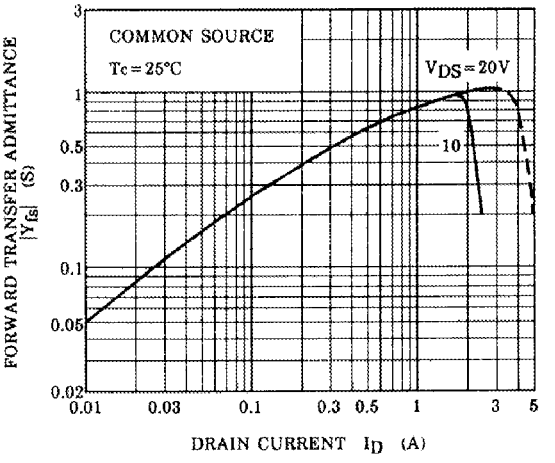
V_{DS} – V_{GS}



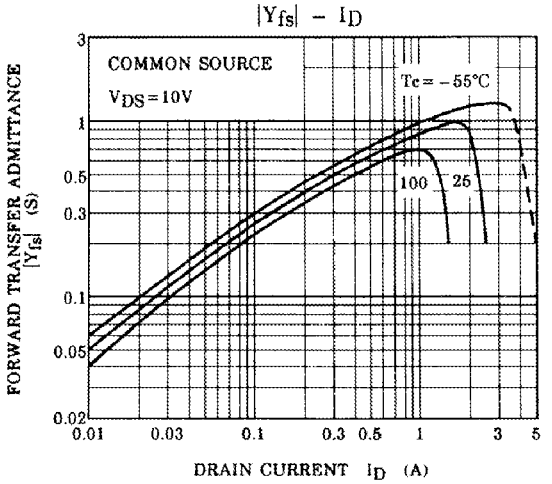
I_D – V_{GS}



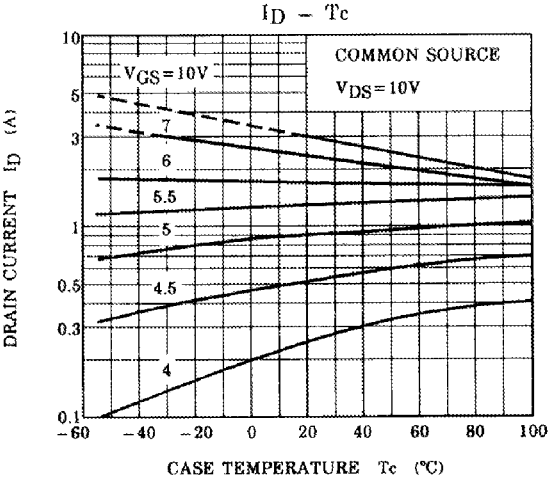
$|Y_{fs}|$ – I_D



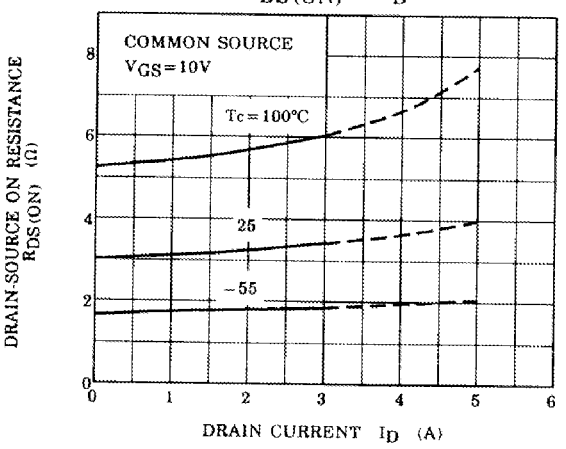
$|Y_{fs}|$ – I_D



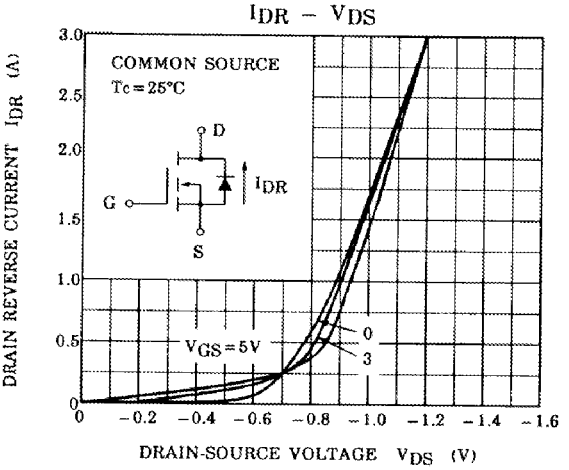
I_D – Tc



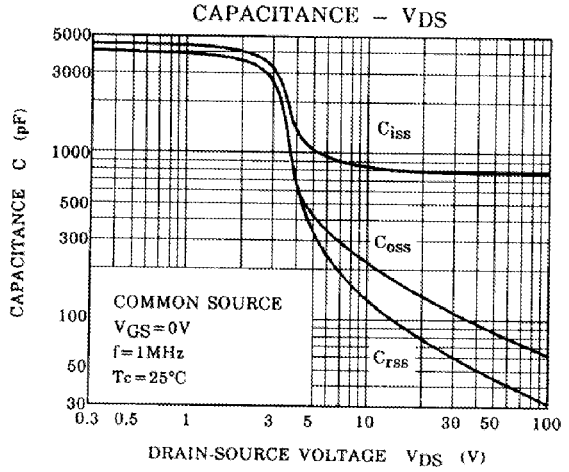
$R_{DS(ON)}$ – I_D



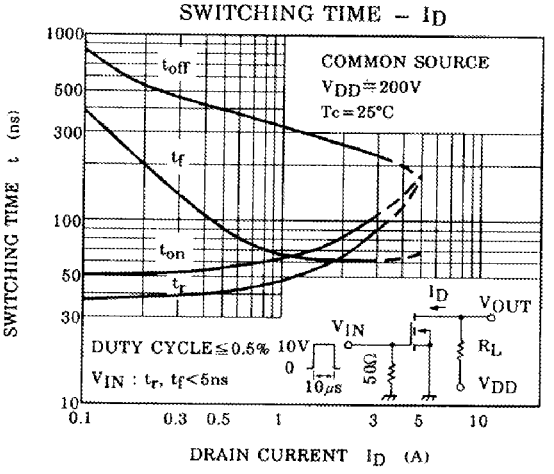
I_{DR} – V_{DS}



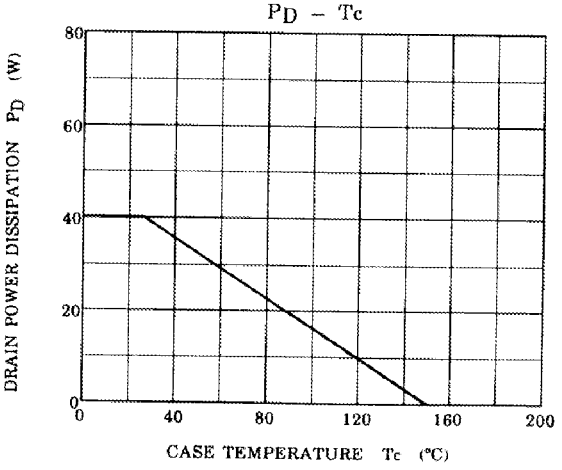
CAPACITANCE – V_{DS}



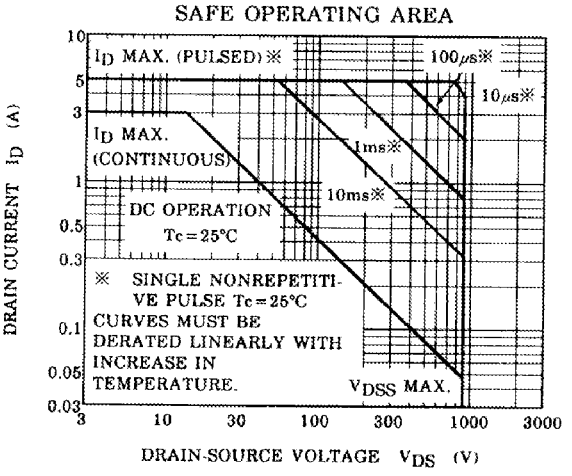
SWITCHING TIME – I_D

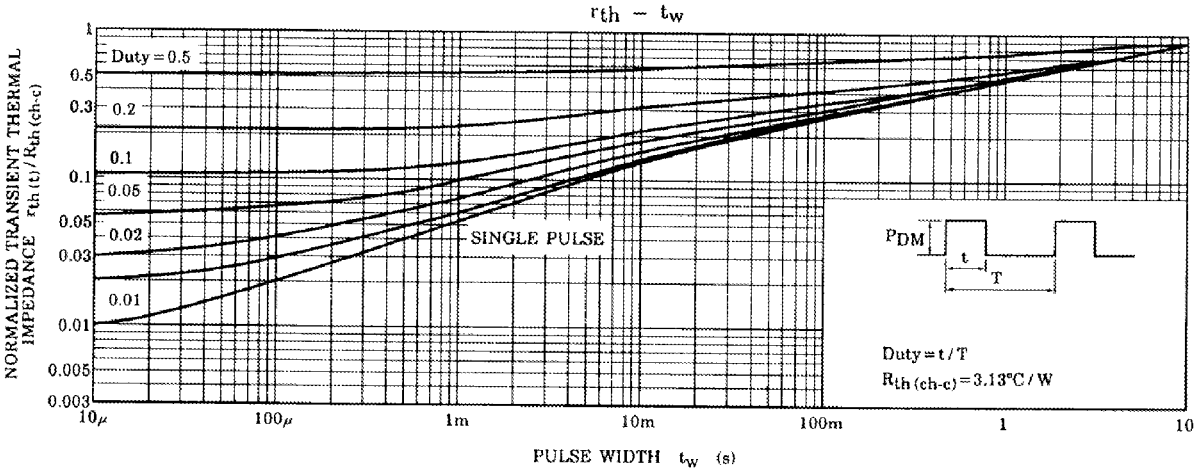


P_D – Tc



SAFE OPERATING AREA




r_{th} – t_w
NORMALIZED TRANSIENT THERMAL IMPEDANCE $r_{th}(t)/R_{th(ch-c)}$
Duty = 0.5
0.2
0.1
0.05
0.02
0.01
SINGLE PULSE
P_{DM}
t
T
Duty = t / T
$R_{th(ch-c)}$ = 3.13°C / W
1
0.5
0.3
0.1
0.05
0.03
0.01
0.005
0.003
10μ
100μ
1m
10m
100m
1
10
PULSE WIDTH t_w (s)