

9097250 TOSHIBA (DISCRETE/OPTO)

99D 16704 DT-39-11



SEMICONDUCTOR

TECHNICAL DATA

TOSHIBA FIELD EFFECT TRANSISTOR

2 S K 5 3 1

SILICON N CHANNEL MOS TYPE
(π -MOS)

HIGH SPEED, HIGH VOLTAGE SWITCHING APPLICATIONS.
SWITCHING REGULATOR, DC-DC CONVERTER AND MOTOR
DRIVE APPLICATIONS.

FEATURES:

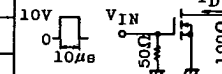
- . High Breakdown Voltage : $V_{(BR)DSS}=450V$
- . High Forward Transfer Admittance : $|Y_{fs}|=2.5S(Typ.)$
- . Low Leakage Current : $I_{GSS}=\pm 100nA(Max.)$ @ $V_{GS}=\pm 20V$
 $I_{DSS}=1mA(Max.)$ @ $V_{DS}=450V$
- . Enhancement-Mode : $V_{th}=1.5 \sim 3.5V$ @ $I_D=1mA$
- . TO-220 Isolation Package Which Requires Neither
 Insulating Bushing Nor Mica Insulator.

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSX}	450	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	DC	I_D	5	A
	Pulse	I_{DP}	8	
Drain Power Dissipation ($T_c=25^\circ\text{C}$)		P_D	40	W
Channel Temperature		T_{ch}	150	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$)

Weight : 2.1g

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I _{GSS}	V _{GS} =±20V, V _{DS} =0	-	-	±100	nA
Drain Cut-off Current		I _{DSS}	V _{DS} =450V, V _{GS} =0	-	-	1.0	mA
Drain-Source Breakdown Voltage		V _(BR) DSS	I _D =10mA, V _{GS} =0	450	-	-	V
Gate Threshold Voltage		V _{th}	V _{DS} =10V, I _D =1mA	1.5	-	3.5	V
Forward Transfer Admittance		Y _{fs}	V _{DS} =10V, I _D =3A	1.0	2.5	-	S
Drain-Source ON Resistance		R _{DS(ON)}	I _D =3A, V _{GS} =10V	-	1.1	1.6	Ω
Drain-Source ON Voltage		V _{DS(ON)}	I _D =8A, V _{GS} =10V	-	12	22	V
Input Capacitance		C _{iss}	V _{DS} =10V, V _{GS} =0, f=1MHz	-	670	900	pF
Reverse Transfer Capacitance		C _{rss}	V _{DS} =10V, V _{GS} =0, f=1MHz	-	50	90	pF
Output Capacitance		C _{oss}	V _{DS} =10V, V _{GS} =0, f=1MHz	-	180	250	pF
Switching Time	Rise Time	t _r	 10V 10nF 10V _{IN} 100Ω 2A I _D V _{OUT} V _{DD} =200V D.U≤1% (Z _{OUT} =50Ω)	-	25	50	ns
	Turn-on Time	t _{on}		-	40	80	ns
	Fall Time	t _f		-	35	70	ns
	Turn-off Time	t _{off}		-	140	280	ns

THIS TRANSISTOR IS AN ELECTROSTATIC SENSITIVE DEVICE. PLEASE HANDLE WITH CAUTION.

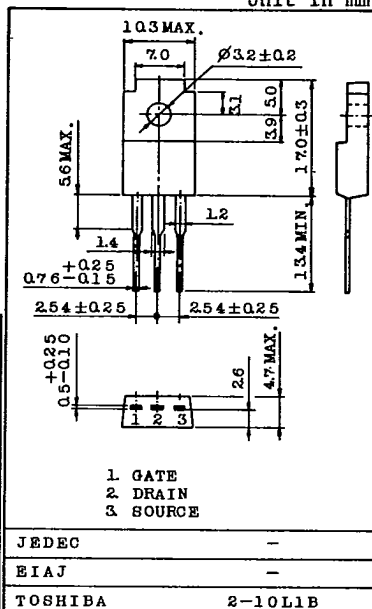
TOSHIBA CORPORATION

GT1A2

- 73 -

INDUSTRIAL APPLICATIONS

Unit in mm



9097250 TOSHIBA (DISCRETE/OPTO)

99D 16705

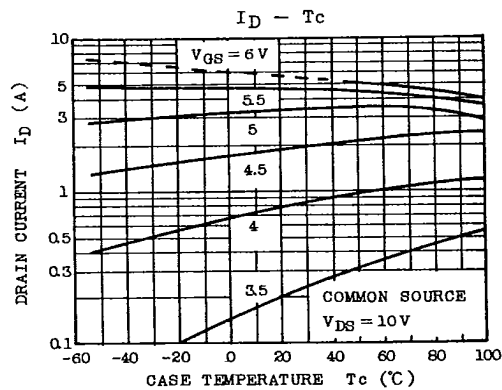
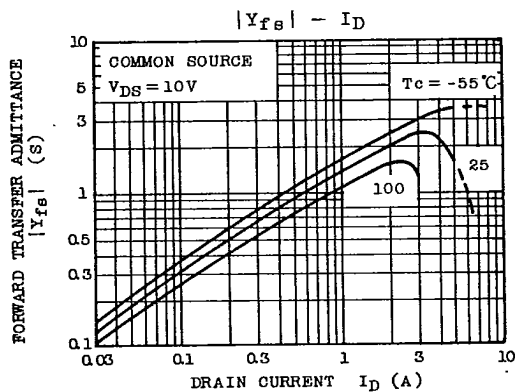
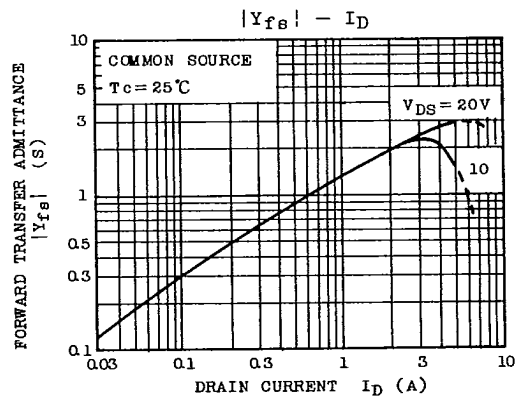
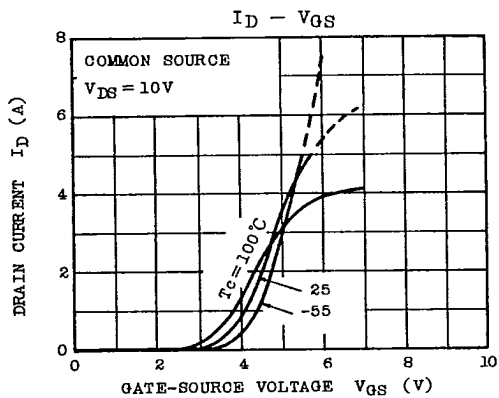
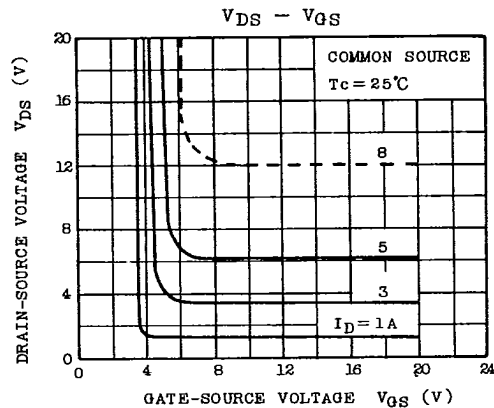
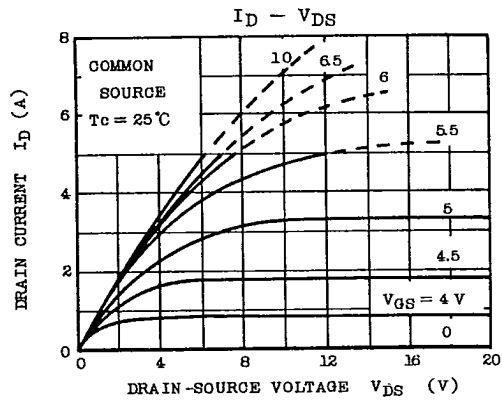
DT-39-11



SEMICONDUCTOR

TECHNICAL DATA

2SK531



TOSHIBA CORPORATION

GT1A2

- 74 -

9097250 TOSHIBA (DISCRETE/OPTO)

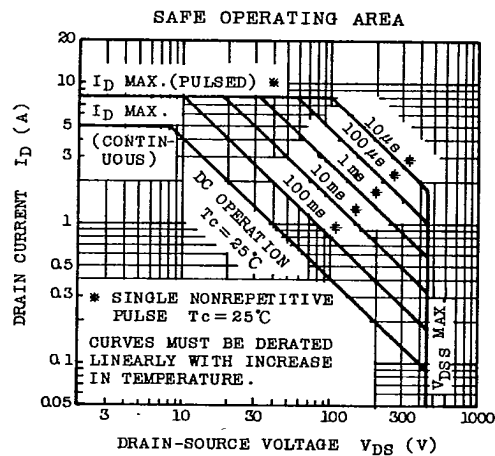
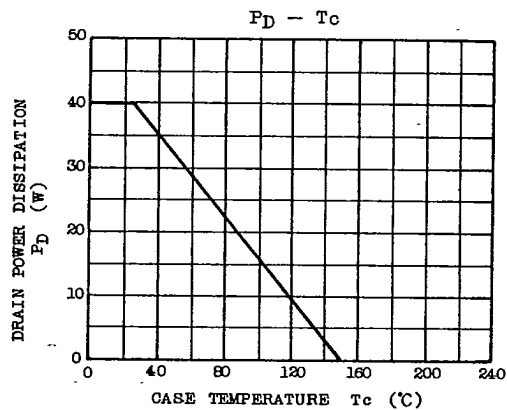
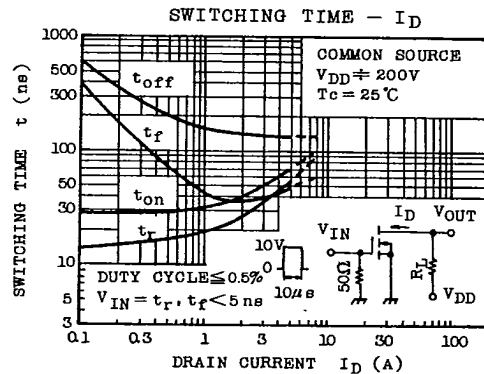
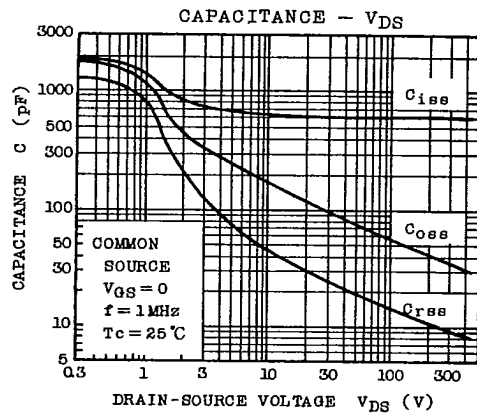
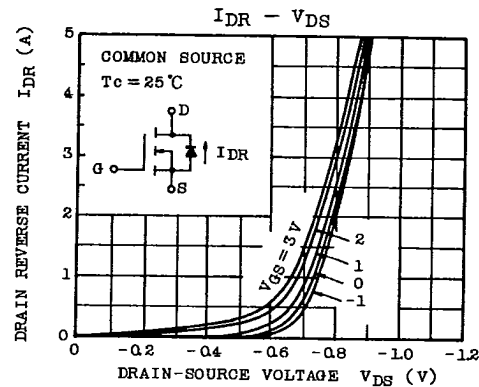
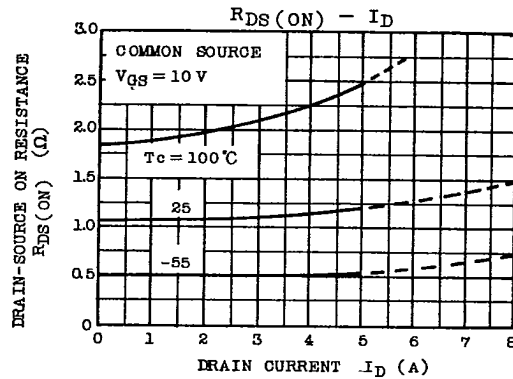
99D 16706 DT-39-11



SEMICONDUCTOR

TECHNICAL DATA

2SK531



TOSHIBA CORPORATION

GT1A2

- 75 -