

9097250 TOSHIBA (DISCRETE/OPTO)

99D 16731 DT-39-13



SEMICONDUCTOR

TECHNICAL DATA

TOSHIBA FIELD EFFECT TRANSISTOR

2 S K 6 4 4

SILICON N CHANNEL MOS TYPE
(π -MOS1)

INDUSTRIAL APPLICATIONS

Unit in mm

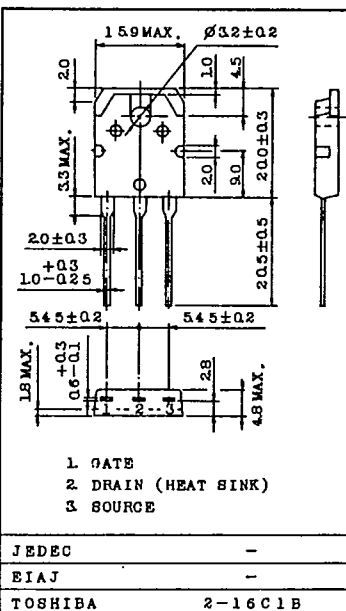
HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.
CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR
DRIVE APPLICATIONS.

FEATURES:

- Low Drain-Source ON Resistance : $R_{DS(ON)}=0.7\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}|=6.0S$ (Typ.)
- Low Leakage Current : $I_{GSS}=\pm 100nA$ (Max.) @ $V_{GS}=\pm 20V$
 $I_{DSS}=250\mu A$ (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_{DSX}	500	V
Drain-Gate Voltage ($R_{GS}=20k\Omega$)		V_{DGR}	500	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	DC	I_D	10	A
	Pulse	I_{DP}	30	
Drain Power Dissipation ($T_c=25^\circ C$)		P_D	125	W
Channel Temperature		T_{ch}	150	$^\circ C$
Storage Temperature Range		T_{stg}	$-55\sim 150$	$^\circ C$



Weight : 4.6g

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Junction to Case	$R_{th(j-c)}$	1.0	$^\circ C/W$
Thermal Resistance, Junction to Ambient	$R_{th(j-a)}$	50	$^\circ C/W$
Maximum Lead Temperature for Soldering Purposes (1.6mm from case for 10 seconds)	T_L	300	$^\circ C$

TOSHIBA CORPORATION

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20\text{V}$, $V_{DS}=0\text{V}$	-	-	± 100	nA
Drain Cut-off Current	I_{DSS}	$V_{DS}=500\text{V}$, $V_{GS}=0\text{V}$	-	-	300	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
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS}=10\text{V}$, $I_D=5\text{A}$	3.0	6.0	-	S
Drain-Source ON Resistance	$R_{DS(ON)}$	$I_D=5\text{A}$, $V_{GS}=10\text{V}$	-	0.7	1.0	Ω
Drain-Source ON Voltage	$V_{DS(ON)}$	$I_D=10\text{A}$, $V_{GS}=10\text{V}$	-	8.5	12.5	V
Input Capacitance	C_{iss}	$V_{DS}=10\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$	-	1350	1800	pF
Reverse Transfer Capacitance	C_{rss}		-	260	450	
Output Capacitance	C_{oss}		-	560	750	
Switching Time	Rise Time		-	35	70	ns
	Turn-on Time		-	50	100	
	Fall Time		-	35	70	
	Turn-off Time		-	200	400	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q_g	$I_D=10\text{A}$, $V_{GS}=10\text{V}$ $V_{DD}=400\text{V}$	-	47	60	nC
Gate-Source Charge	Q_{gs}		-	22	-	
Gate-Drain ("Miller") Charge	Q_{gd}		-	25	-	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_a=25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	--	-	-	10	A
Pulse Drain Reverse Current	I_{DRP}	--	-	-	30	A
Diode Forward Voltage	V_{DSF}	$I_{DR}=10\text{A}$, $V_{GS}=0\text{V}$	-	-	2.0	V
Reverse Recovery Time	t_{rr}	$I_{DR}=10\text{A}$	-	350	-	ns
Reverse Recovered Charge	Q_{rr}	$dI_{DR}/dt=100\text{A}/\mu\text{s}$	-	2.4	-	μC

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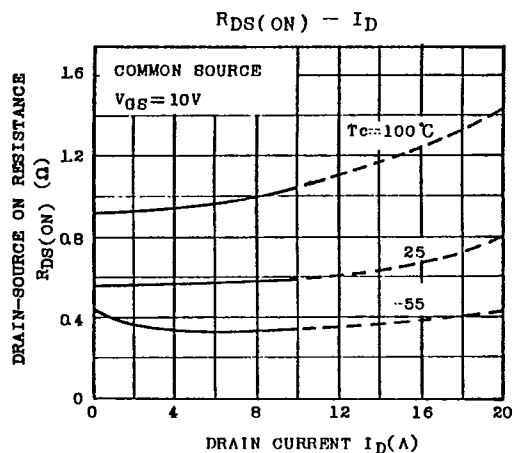
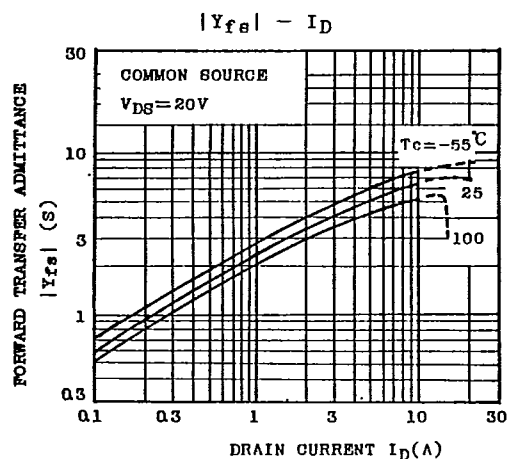
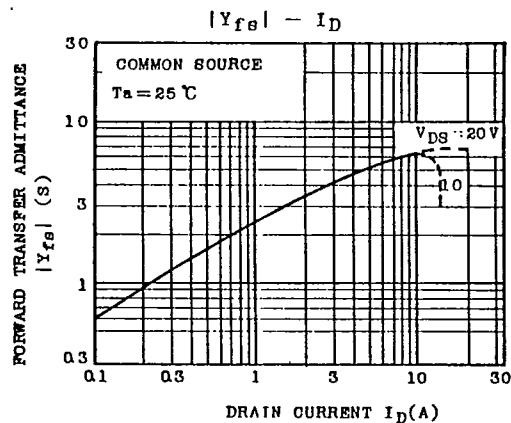
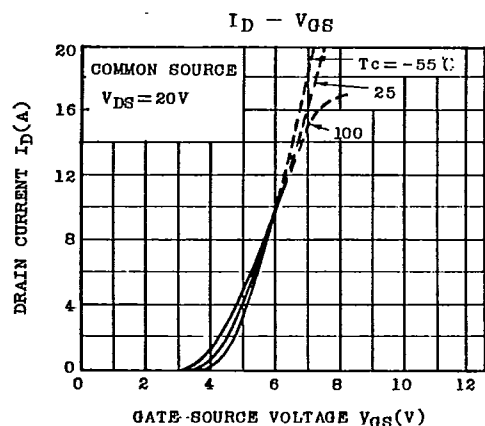
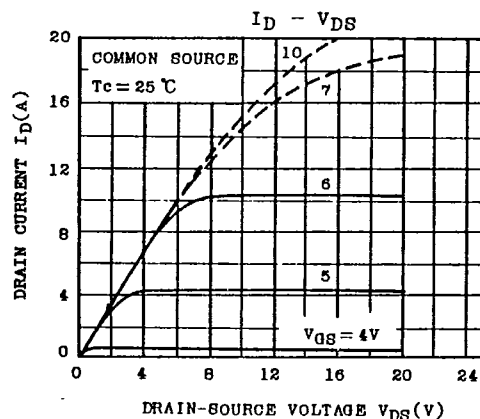
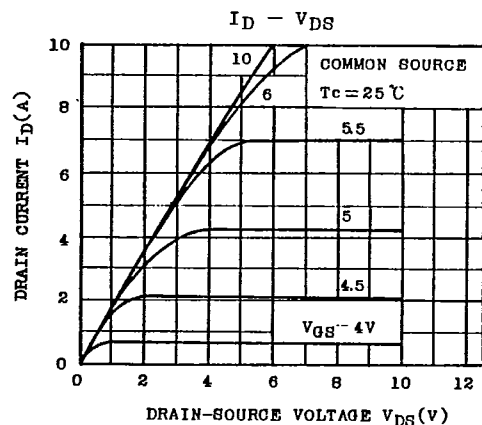
9097250 TOSHIBA (DISCRETE/OPTO)

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TOSHIBA SEMICONDUCTOR

TECHNICAL DATA

2SK644



EGA-2SK644-3

TOSHIBA CORPORATION

9097250 TOSHIBA (DISCRETE/OPTO)

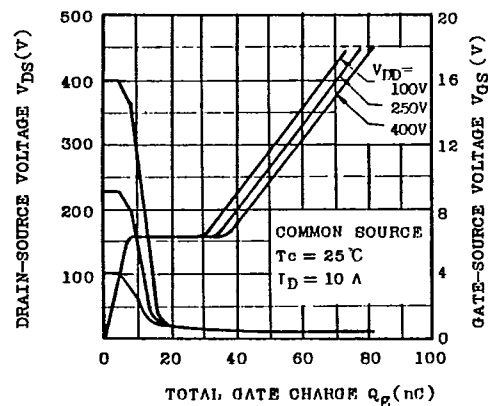
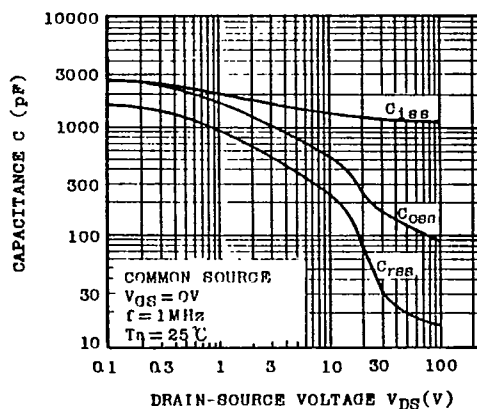
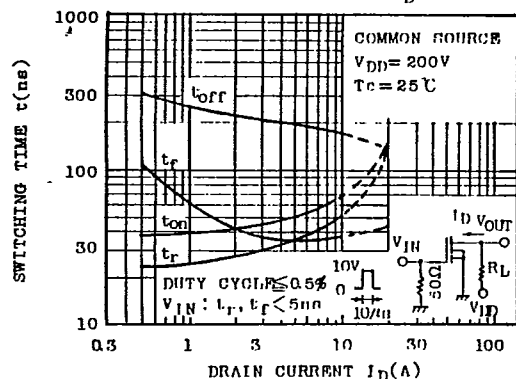
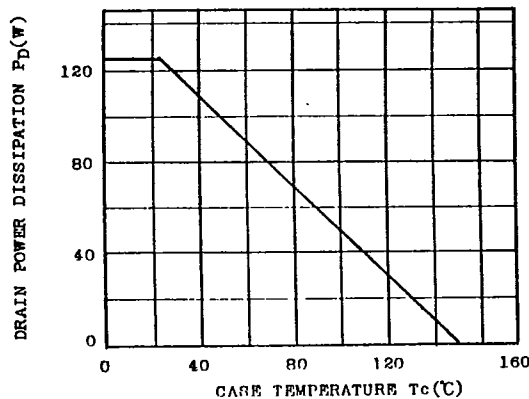
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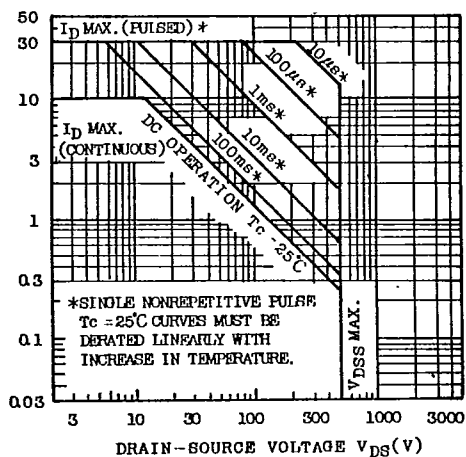
TOSHIBA SEMICONDUCTOR

TECHNICAL DATA

2SK644

DYNAMIC INPUT/OUTPUT
CHARACTERISTICSCAPACITANCE- V_{DS} SWITCHING TIME- I_D  $P_D - T_c$ 

SAFE OPERATING AREA



EGA-2SK644-4

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