

9097250 TOSHIBA (DISCRETE/OPTO)

99D 16745 DT-39-13
TOSHIBA FIELD EFFECT TRANSISTOR**TOSHIBA** SEMICONDUCTOR
TECHNICAL DATA

2 S K 7 8 8

SILICON N CHANNEL MOS TYPE
(π -MOS)

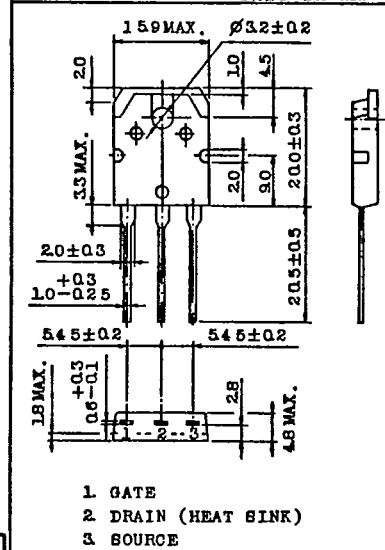
INDUSTRIAL APPLICATIONS

Unit in mm

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

FEATURES:

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.38\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 8.0S$ (Typ.)
- Low Leakage Current : $I_{GSS} = 100nA$ (Max.) @ $V_{GS} = \pm 20V$
 $I_{DSS} = 300nA$ (Max.) @ $V_{DS} = 500V$
- Enhancement-Mode : $V_{th} = 2.0 \sim 4.0S$ @ $V_{DS} = 10V, I_D = 1mA$



JEDEC

EIAJ

TOSHIBA

2-16C1B

Weight : 4.6g

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	13	A
	Pulse	I_{DP}	52	
Drain Power Dissipation ($T_c = 25^\circ C$)		P_D	150	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, Junction to Case	$R_{th(j-c)}$	0.83	$^\circ C/W$
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	$^\circ C$

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TOSHIBA SEMICONDUCTOR

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ELECTRICAL CHARACTERISTICS (Ta=25°C)

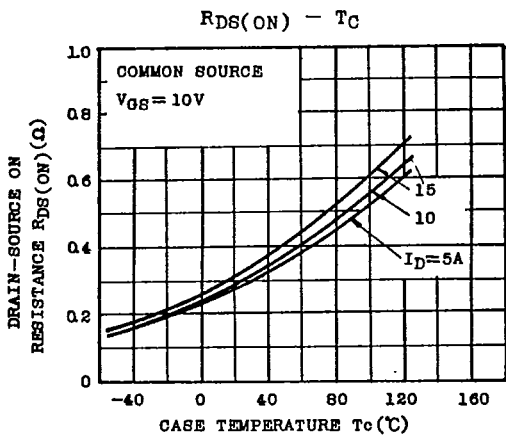
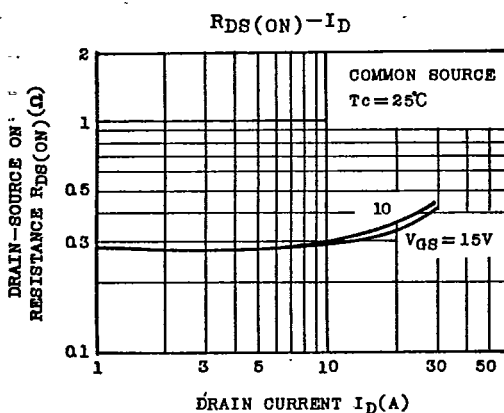
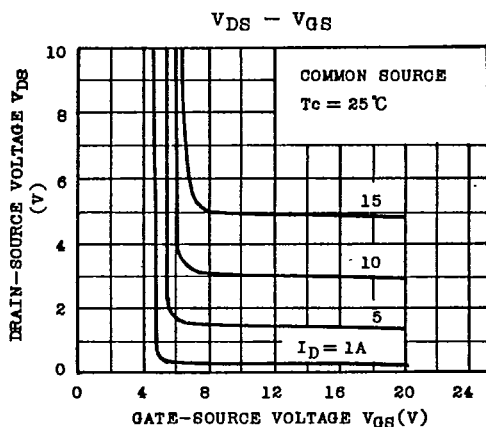
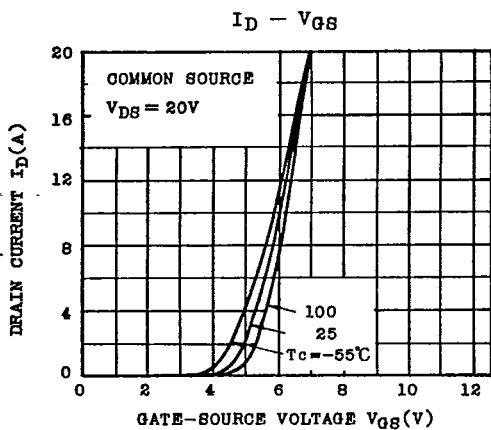
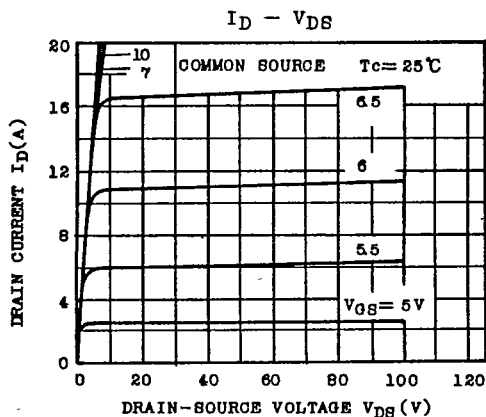
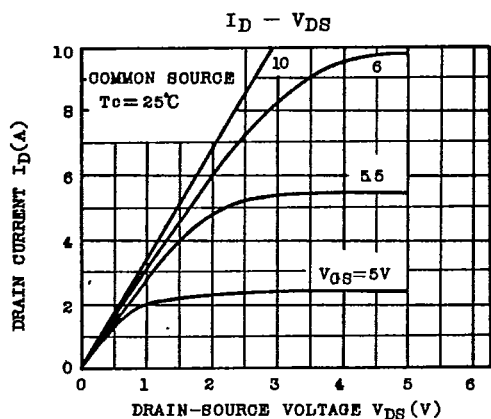
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Drain Cut-off Current		I_{DSS}	$V_{DS}=500V, V_{GS}=0V$	-	-	300	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D=10mA, V_{GS}=0V$	500	-	-	V
Gate Threshold Voltage		V_{th}	$V_{DS}=10V, I_D=1mA$	2.0	-	4.0	V
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS}=10V, I_D=7A$	6.0	8.0	-	S
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D=7A, V_{GS}=10V$	-	0.38	0.50	Ω
Input Capacitance		C_{iss}	$V_{DS}=10V, V_{GS}=0V, f=1MHz$	-	2300	3600	pF
Reverse Transfer Capacitance		C_{rss}		-	570	680	
Output Capacitance		C_{oss}		-	1000	1400	
Switching Time	Rise Time	t_r	<p>$I_D=7A$ V_{IN} V_{OUT} $V_{DD}=210V$ $t_r, t_f < 5ns$ $Duty \leq 1\%$</p>	-	70	140	ns
	Turn-on Time	t_{on}		-	100	200	
	Fall Time	t_f		-	75	150	
	Turn-off Time	t_{off}		-	350	700	
Total Gate charge (Gate-Source Plus Gate-Drain)		Q_g	$I_D=15A, V_{GS}=10V$ $V_{DD}=400V$	-	87	110	nC
Gate-Source Charge		Q_{gs}		-	35	-	
Gate-Drain ("Miller") Charge		Q_{gd}		-	52	-	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (Ta=25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	--	-	-	13	A
Rulse Drain Reverse Current	I_{DRP}	--	-	-	52	A
Diode Foward Voltage	V_{DSF}	$I_{DR}=13A, V_{GS}=0V$	-	-	1.9	V
Reverse Recovery Time	t_{rr}	$I_{DR}=13A$	-	400	-	ns
Reverse Recovered Charge	Q_{rr}	$dI_{DR}/dt=100A/us$	-	4.0	-	μC

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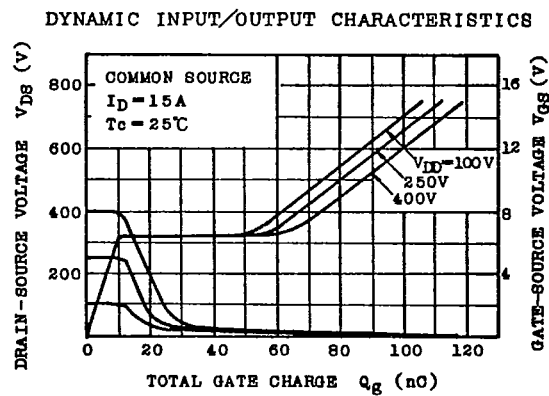
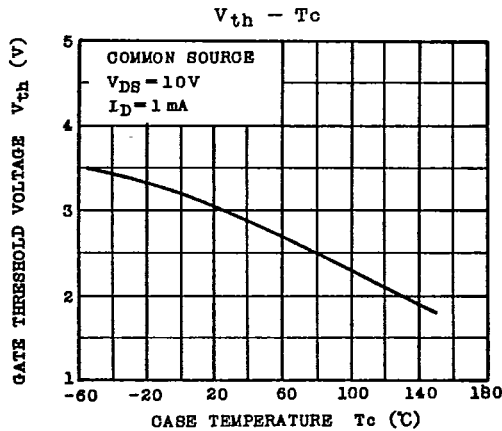
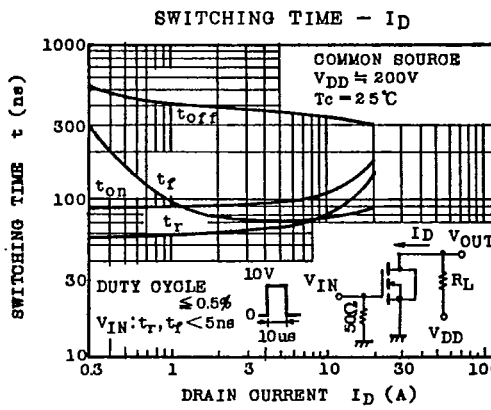
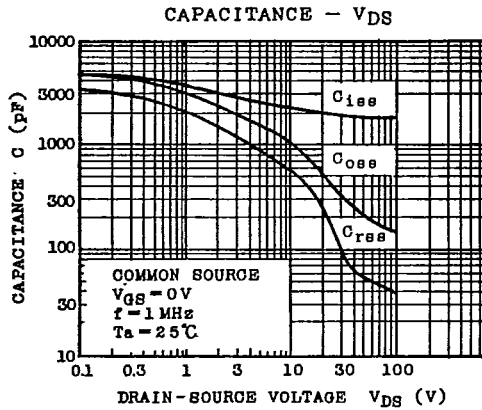
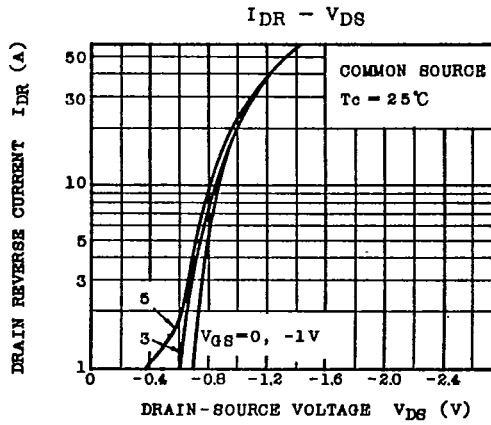
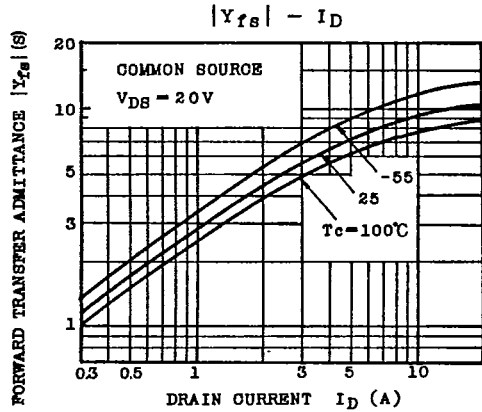


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