

TOSHIBA FIELD EFFECT TRANSISTOR SILICON P CHANNEL MOS TYPE (L²-π-MOS V)

2SJ334

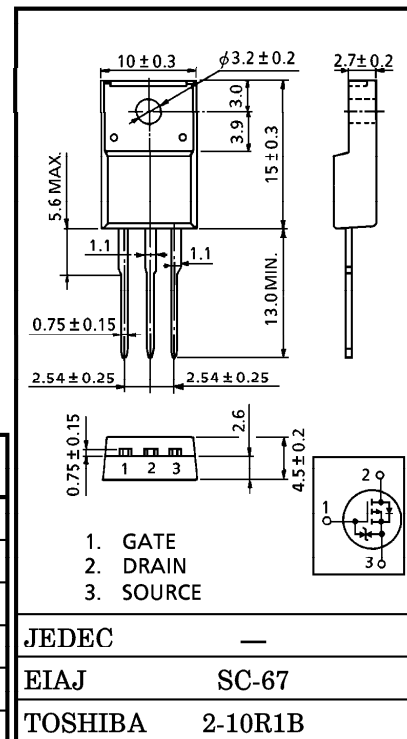
HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS
DC-DC CONVERTER, RELAY DRIVE AND MOTOR DRIVE APPLICATIONS

INDUSTRIAL APPLICATIONS
Unit in mm

- 4V Gate Drive
- Low Drain-Source ON Resistance : $R_{DS(ON)} = 29m\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 23S$ (Typ.)
- Low Leakage Current : $I_{DSS} = -100\mu A$ (Max.) ($V_{DS} = -60V$)
- Enhancement-Mode : $V_{th} = -0.8 \sim -2.0V$
($V_{DS} = -10V, I_D = -1mA$)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	-60	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	-60	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	DC	I_D	-30	A
	Pulse	I_{DP}	-120	A
Drain Power Dissipation ($T_c = 25^\circ C$)		P_D	45	W
Single Pulse Avalanche Energy**		E_{AS}	936	mJ
Avalanche Current		I_{AR}	-30	A
Repetitive Avalanche Energy*		E_{AR}	4.5	mJ
Channel Temperature		T_{ch}	150	°C
Storage Temperature Range		T_{stg}	-55~150	°C



Weight : 1.9g

Thermal Characteristics

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	2.78	°C / W
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	62.5	°C / W

Note ;

- * Repetitive rating ; Pulse Width Limited by Max. junction temperature.
- ** $V_{DD} = -50V, T_{ch} = 25^\circ C, L = 747\mu H, R_G = 25\Omega, I_{AR} = -30A$

**This transistor is an electrostatic sensitive device.
Please handle with caution.**

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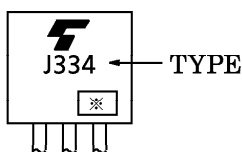
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current	IGSS	VGS = ±16V, VDS = 0V	—	—	±10	μA	
Drain Cut-off Current	IDSS	VDS = -60V, VGS = 0V	—	—	-100	μA	
Drain-Source Breakdown Voltage	V(BR)DSS	ID = -10mA, VGS = 0V	-60	—	—	V	
Gate Threshold Voltage	Vth	VDS = -10V, ID = -1mA	-0.8	—	-2.0	V	
Drain-Source ON Resistance	RDS(ON)	VGS = -4V, ID = -15A	—	46	60	mΩ	
		VGS = -10V, ID = -15A	—	29	38		
Forward Transfer Admittance	Yfs	VDS = -10V, ID = -15A	14	23	—	S	
Input Capacitance	Ciss	VDS = -10V, VGS = 0V f = 1MHz	—	3300	—	pF	
Reverse Transfer Capacitance	Crss		—	460	—		
Output Capacitance	Coss		—	1450	—		
Switching Time	Rise Time	tr		—	20	—	ns
	Turn-on Time	ton		—	25	—	
	Fall Time	tf		—	35	—	
	Turn-off Time	t _{off}		VIN : tr, tf < 5ns Duty ≤ 1%, tw = 10μs	—	130	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Qg	VDD = -48V, VGS = -10V ID = -30A	—	110	—	nC	
Gate-Source Charge	Qgs		—	75	—		
Gate-Drain ("Miller") Charge	Qgd		—	35	—		

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	IDR	—	—	—	30	A
Pulse Drain Reverse Current	IDRP	—	—	—	120	A
Diode Forward Voltage	VDSF	IDR = -30A, VGS = 0V	—	—	1.7	V
Reverse Recovery Time	t _{rr}	IDR = -30A, VGS = 0V	—	100	—	ns
Reverse Recovery Charge	Q _{rr}	dIDR / dt = 50A / μs	—	0.16	—	μC

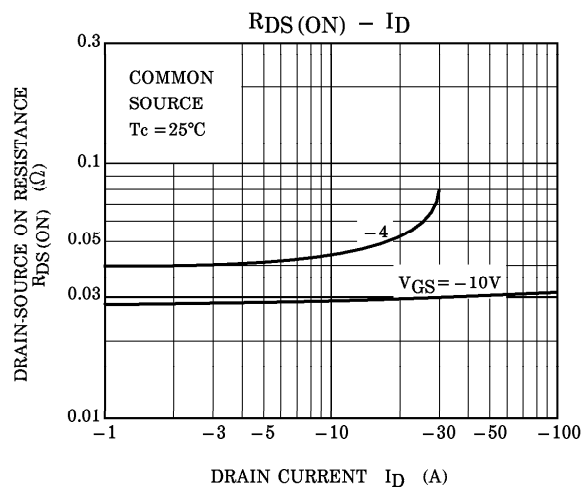
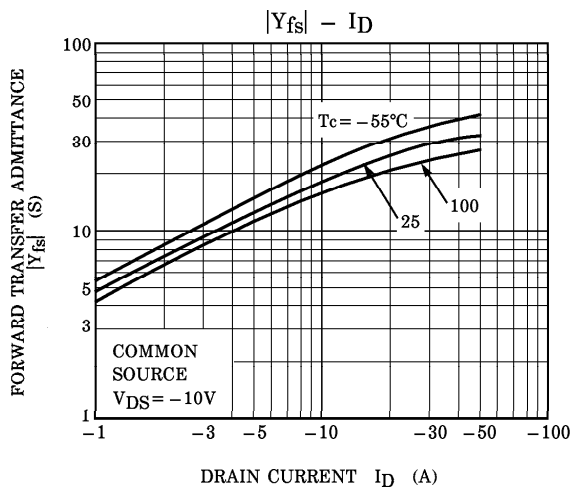
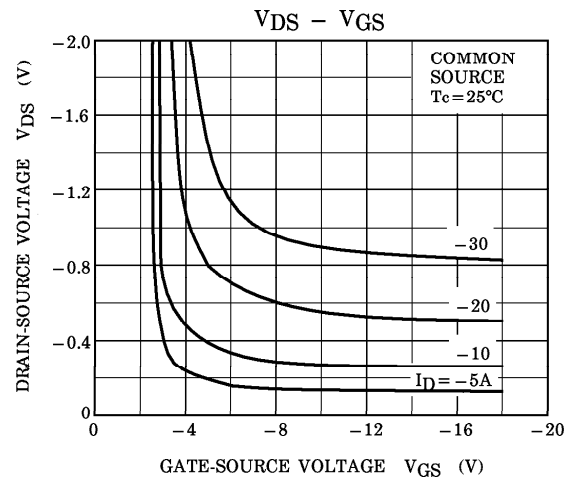
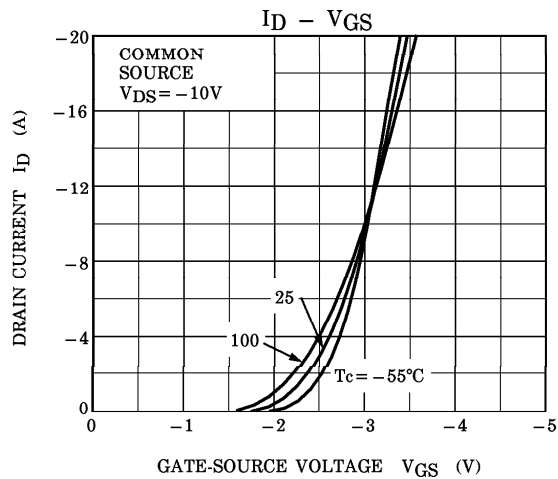
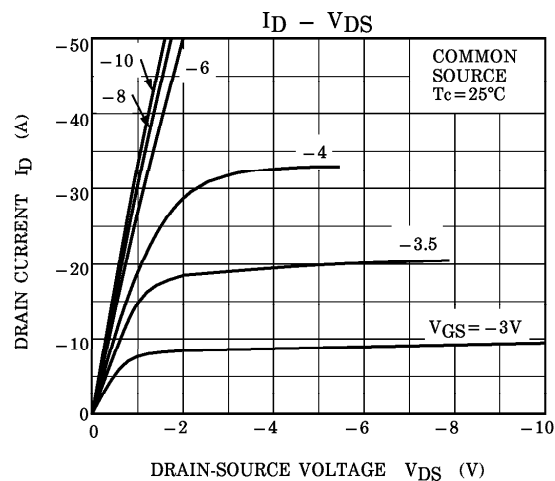
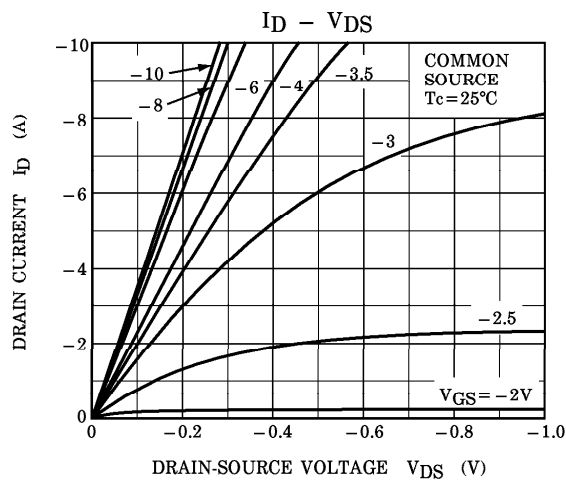
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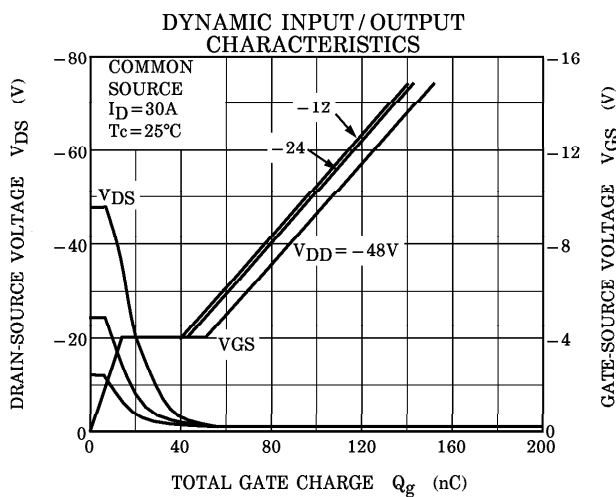
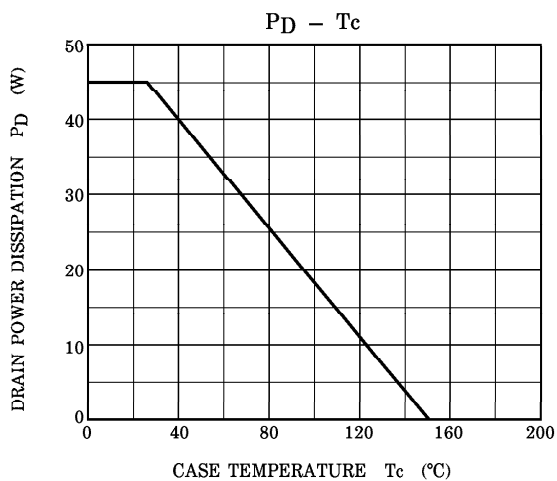
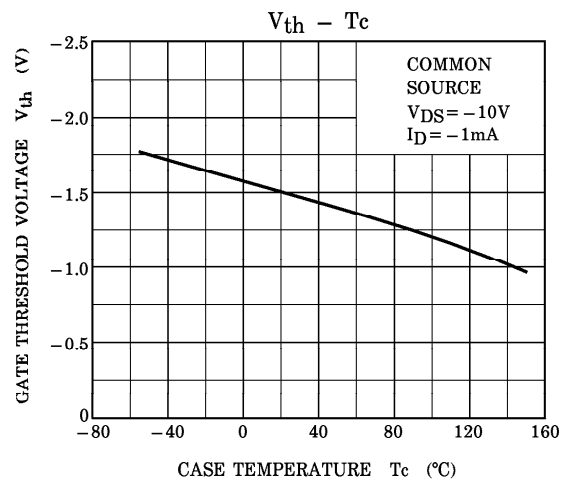
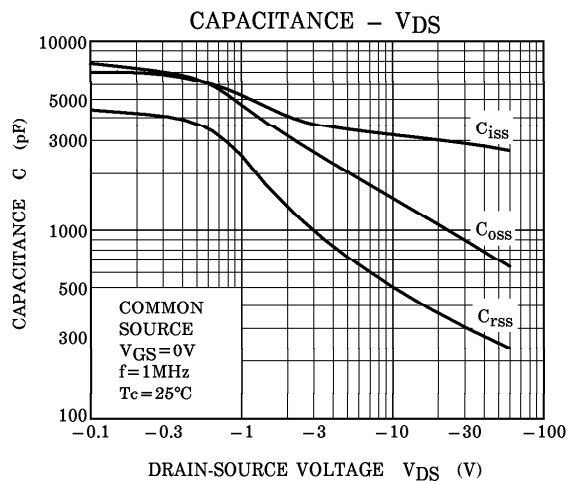
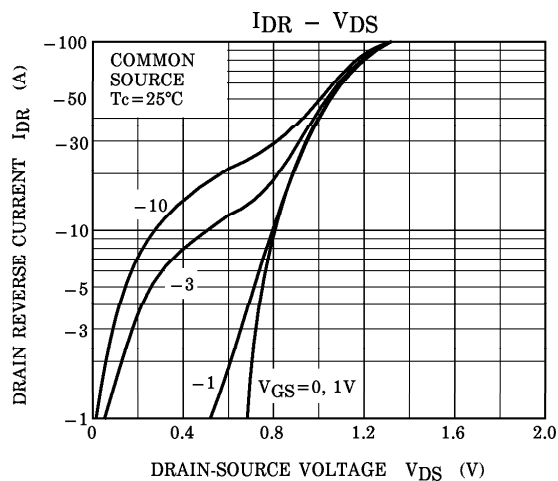
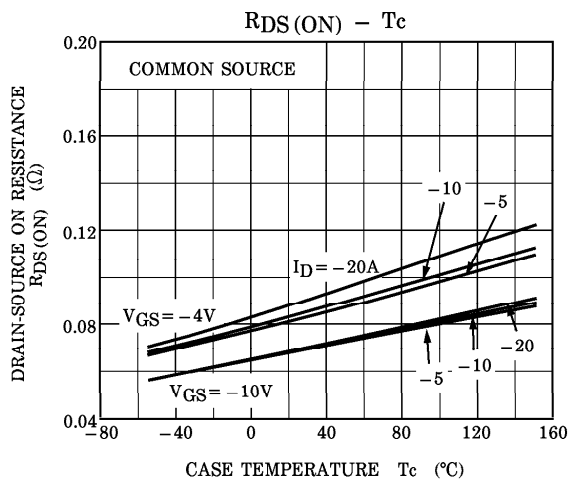


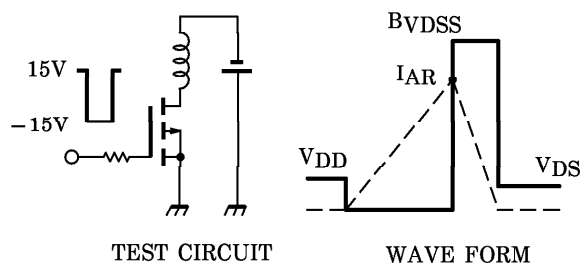
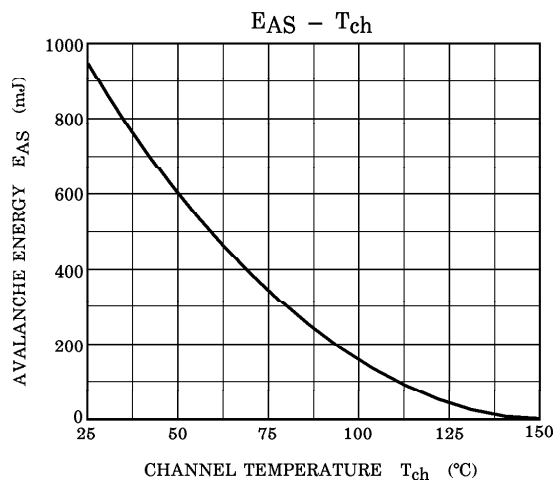
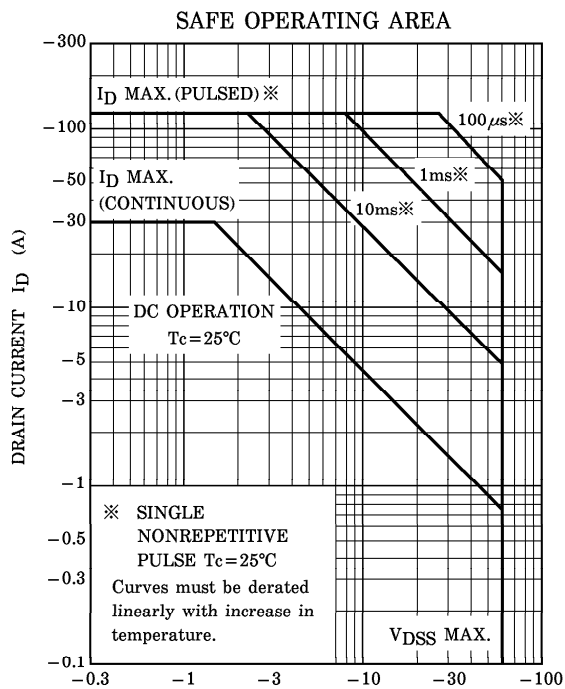
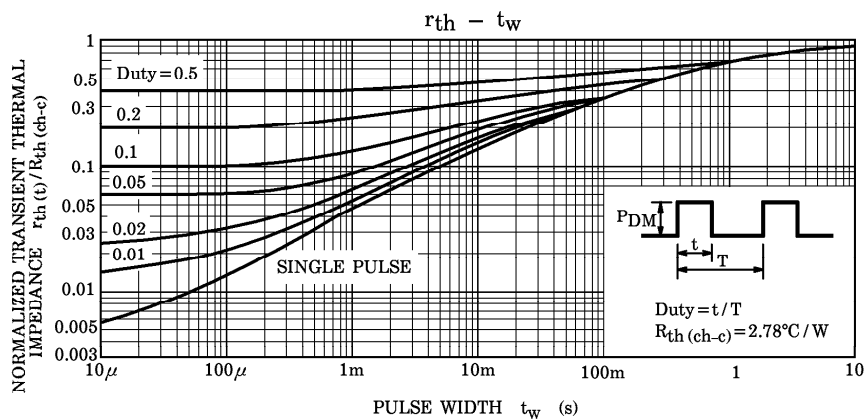
※ Lot Number

□ □ — Month (Starting from Alphabet A)

□ — Year (Last Number of the Christian Era)







Peak $I_{AR} = -30A$, $R_G = 25\Omega$
 $V_{DD} = -50V$, $L = 747\mu H$

$$E_{AS} = \frac{1}{2} \cdot L \cdot I^2 \cdot \left(\frac{B_{VDSS}}{B_{VDSS} - V_{DD}} \right)$$