

TOSHIBA FIELD EFFECT TRANSISTOR SILICON P CHANNEL MOS TYPE (L^2 - π -MOSV)

2SJ334

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS

DC-DC CONVERTER, RELAY DRIVE AND MOTOR DRIVE APPLICATIONS

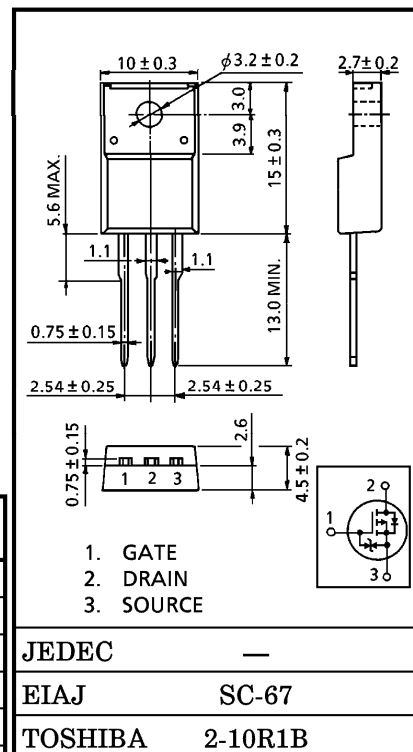
INDUSTRIAL APPLICATIONS

Unit in mm

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

MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	-60	V
Drain-Gate Voltage ($R_{GS} = 20\text{ k}\Omega$)		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 ($T_c = 25^\circ\text{C}$)		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	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^\circ\text{C}$



Weight : 1.9 g

THERMAL CHARACTERISTICS

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

Note ;

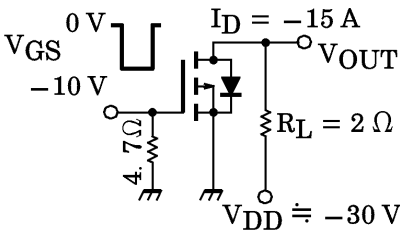
* Repetitive rating ; Pulse Width Limited by Max. junction temperature.

** $V_{DD} = -50\text{ V}$, $T_{ch} = 25^\circ\text{C}$ (initial), $L = 747\text{ }\mu\text{H}$, $R_G = 25\text{ }\Omega$, $I_{AR} = -30\text{ A}$ **This transistor is an electrostatic sensitive device. Please handle with caution.**

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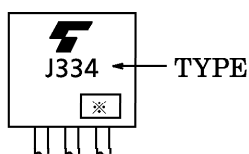
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I _{GSS}	V _{GS} = ±16 V, V _{DS} = 0 V	—	—	±10	μA
Drain Cut-off Current		I _{DSS}	V _{DS} = -60 V, V _{GS} = 0 V	—	—	-100	μA
Drain-Source Breakdown Voltage		V _(BR) DSS	I _D = -10 mA, V _{GS} = 0 V	-60	—	—	V
Gate Threshold Voltage		V _{th}	V _{DS} = -10 V, I _D = -1 mA	-0.8	—	-2.0	V
Drain-Source ON Resistance		R _{DS} (ON)	V _{GS} = -4 V, I _D = -15 A	—	46	60	mΩ
			V _{GS} = -10 V, I _D = -15 A	—	29	38	
Forward Transfer Admittance		Y _{fs}	V _{DS} = -10 V, I _D = -15 A	14	23	—	S
Input Capacitance		C _{iss}	V _{DS} = -10 V, V _{GS} = 0 V, f = 1 MHz	—	3300	—	pF
Reverse Transfer Capacitance		C _{rss}		—	460	—	
Output Capacitance		C _{oss}		—	1450	—	
Switching Time	Rise Time	t _r		—	20	—	ns
	Turn-on Time	t _{on}		—	25	—	
	Fall Time	t _f		—	35	—	
	Turn-off Time	t _{off}		—	130	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q _g	V _{DD} = -48 V, V _{GS} = -10 V, I _D = -30 A	—	110	—	nC
Gate-Source Charge		Q _{gs}		—	75	—	
Gate-Drain ("Miller") Charge		Q _{gd}		—	35	—	

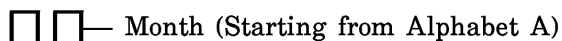
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (Ta = 25°C)

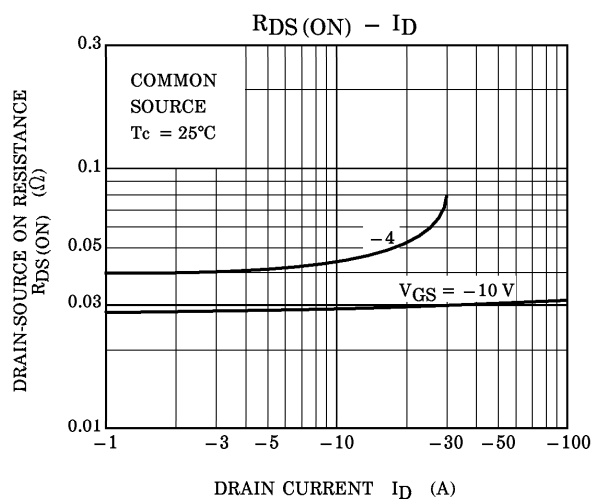
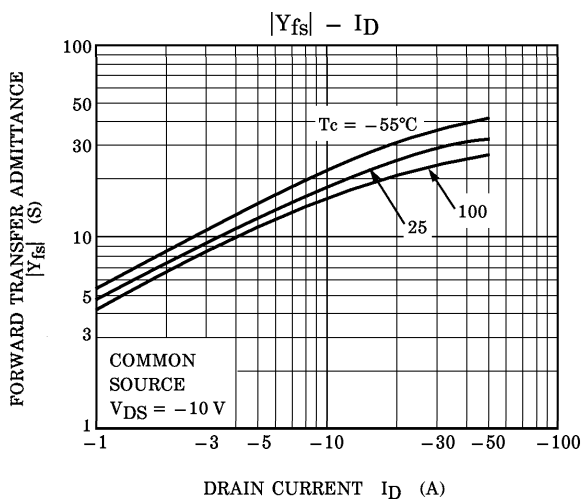
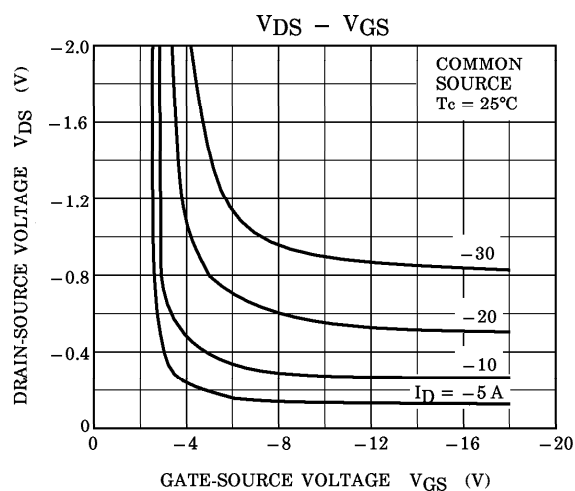
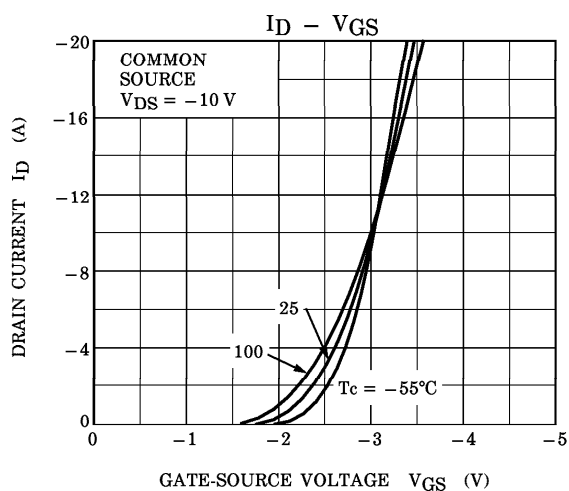
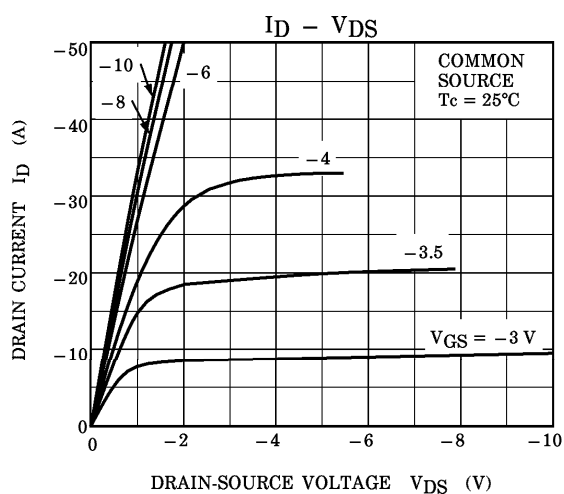
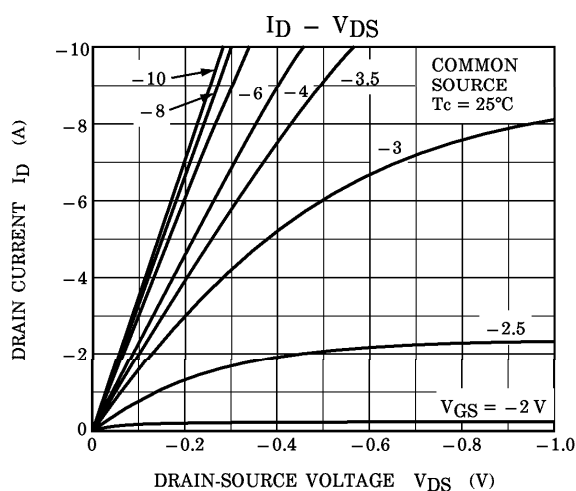
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I _{DR}	—	—	—	30	A
Pulse Drain Reverse Current	I _{DRP}	—	—	—	120	A
Diode Forward Voltage	V _{DSF}	I _{DR} = -30 A, V _{GS} = 0 V	—	—	1.7	V
Reverse Recovery Time	t _{rr}	I _{DR} = -30 A, V _{GS} = 0 V dI _{DR} /dt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

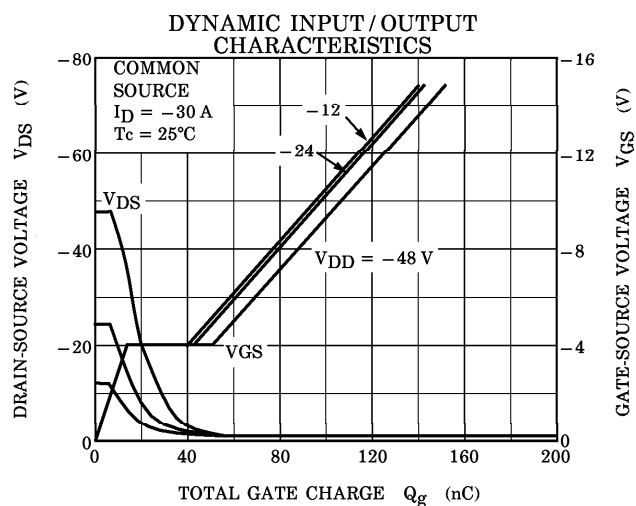
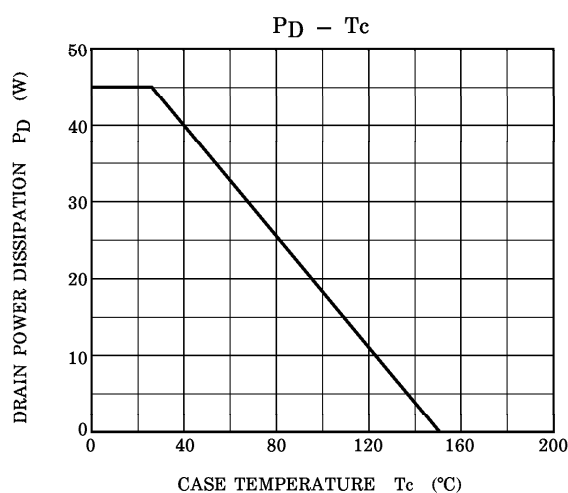
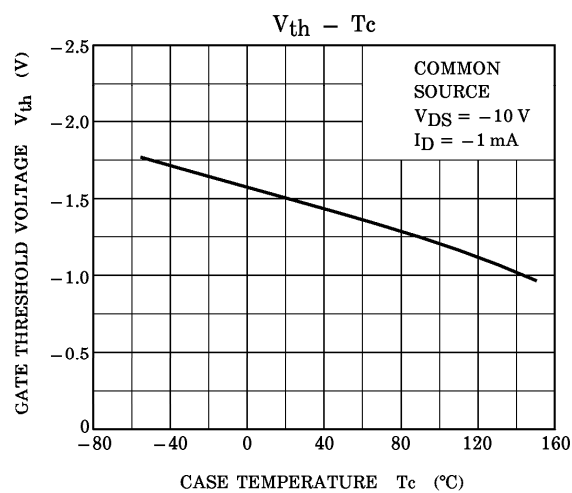
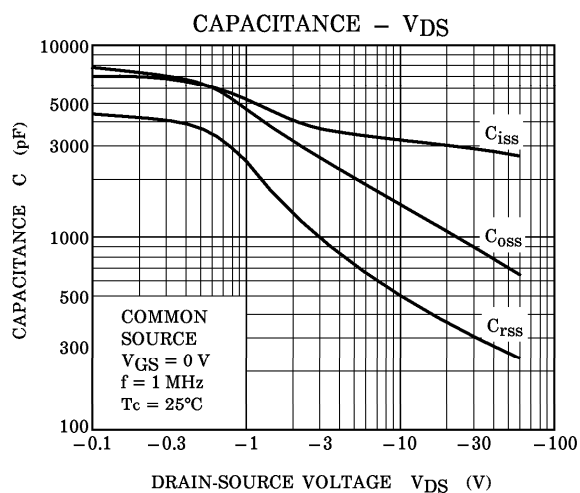
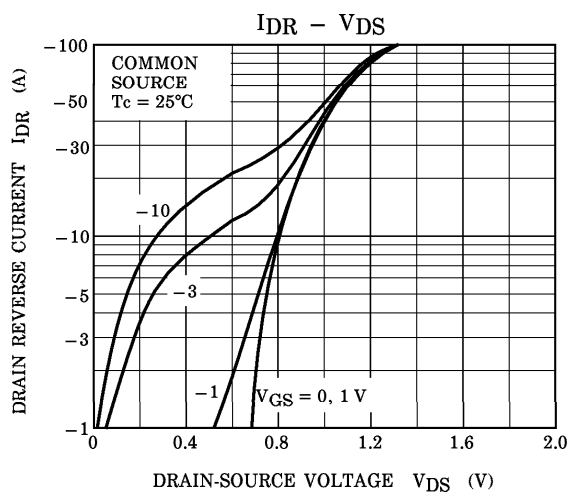
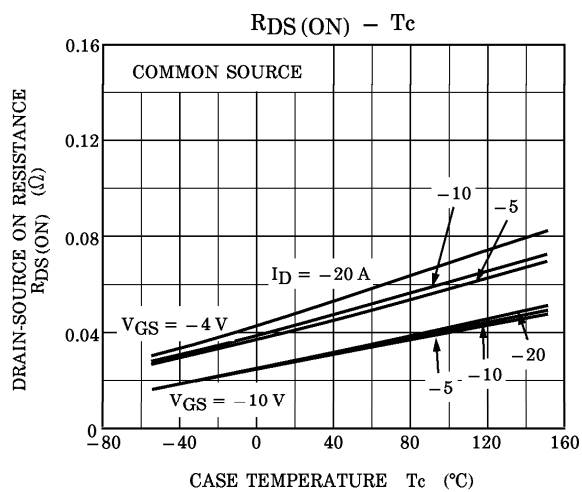
MARKING

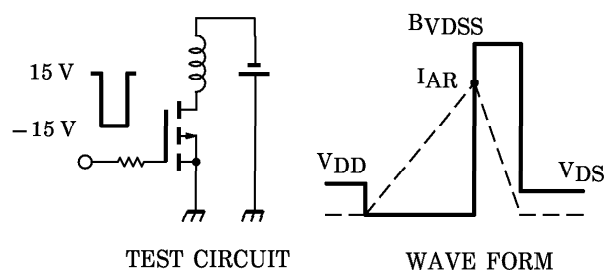
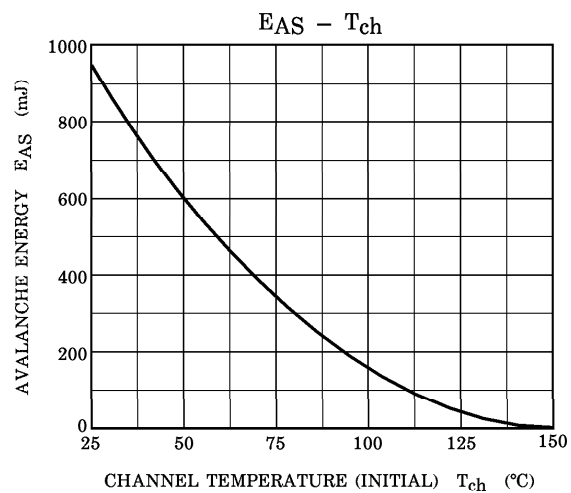
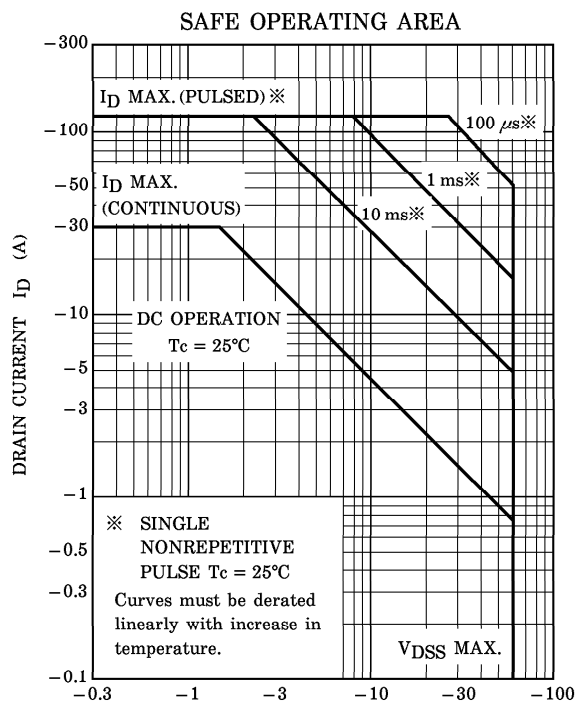
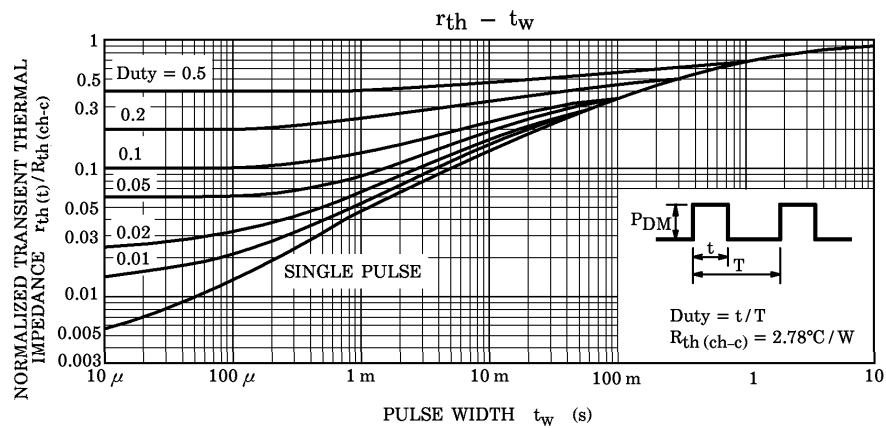


※ Lot Number







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