

TOSHIBA Field Effect Transistor Silicon N Channel MOS Type (π-MOSII)⁵

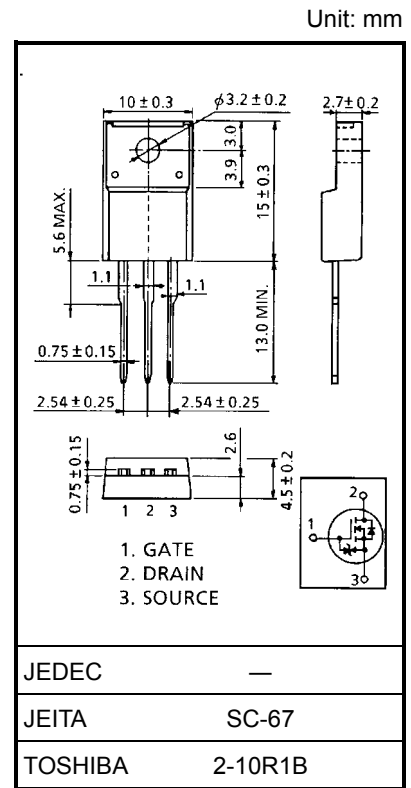
2SK2274

Chopper Regulator, DC-DC Converter and Motor Drive Applications

- Low drain-source ON resistance : $R_{DS(ON)} = 1.5\Omega$ (typ.)
- High forward transfer admittance : $|Y_{fs}| = 2.5\text{ S}$ (typ.)
- Low leakage current : $I_{DSS} = 300\ \mu\text{A}$ (max) ($V_{DS} = 640\text{ V}$)
- Enhancement-mode : $V_{th} = 1.5\sim 3.5\text{ V}$ ($V_{DS} = 10\text{ V}$, $I_D = 1\text{ mA}$)

Maximum Ratings ($T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Rating	Unit	
Drain-source voltage	V_{DSS}	700	V	
Drain-gate voltage ($R_{GS} = 20\text{ k}\Omega$)	V_{DGR}	700	V	
Gate-source voltage	V_{GSS}	± 30	V	
Drain current	DC (Note 1)	I_D	5	A
	Pulse (Note 1)	I_{DP}	15	A
Drain power dissipation ($T_c = 25^\circ\text{C}$)	P_D	45	W	
Channel temperature	T_{ch}	150	$^\circ\text{C}$	
Storage temperature range	T_{stg}	-55~150	$^\circ\text{C}$	



Weight: 1.9 g (typ.)

Thermal Characteristics

Characteristics	Symbol	Max	Unit
Thermal resistance, channel to case	$R_{th(ch-c)}$	2.77	$^\circ\text{C} / \text{W}$
Thermal resistance, channel to ambient	$R_{th(ch-a)}$	62.5	$^\circ\text{C} / \text{W}$

Note 1: Please use devices on condition that the channel temperature is below 150°C .

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

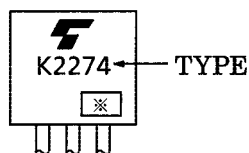
Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		I_{GSS}	$V_{GS} = \pm 30\text{ V}, V_{DS} = 0\text{ V}$	—	—	± 100	nA
Drain cut-off current		I_{DSS}	$V_{DS} = 640\text{ V}, V_{GS} = 0\text{ V}$	—	—	300	μA
Drain-source breakdown voltage		$V_{(BR)DSS}$	$I_D = 10\text{ mA}, V_{GS} = 0\text{ V}$	700	—	—	V
Gate threshold voltage		V_{th}	$V_{DS} = 10\text{ V}, I_D = 1\text{ mA}$	1.5	—	3.5	V
Drain-source ON resistance		$R_{DS(ON)}$	$V_{GS} = 10\text{ V}, I_D = 2\text{ A}$	—	1.5	1.7	Ω
Forward transfer admittance		$ Y_{fs} $	$V_{DS} = 20\text{ V}, I_D = 2\text{ A}$	1.0	2.5	—	S
Input capacitance		C_{iss}	$V_{DS} = 10\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$	—	610	—	pF
Reverse transfer capacitance		C_{rss}		—	60	—	
Output capacitance		C_{oss}		—	110	—	
Switching time	Rise time	t_r	<p>$I_D = 2\text{ A}$ $V_{GS} = 10\text{ V}$ 0 V 50Ω $R_L = 200\Omega$ $V_{DD} = 400\text{ V}$ Duty $\leq 1\%$, $t_w = 10\mu\text{s}$</p>	—	55	—	ns
	Turn-on time	t_{on}		—	80	—	
	Fall time	t_f		—	65	—	
	Turn-off time	t_{off}		—	240	—	
Total gate charge (Gate-source plus gate-drain)		Q_g	$V_{DD} = 400\text{ V}, V_{GS} = 10\text{ V}, I_D = 5\text{ A}$	—	44	—	nC
Gate-source charge		Q_{gs}		—	20	—	
Gate-drain ("miller") charge		Q_{gd}		—	24	—	

Source-Drain Ratings and Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Continuous drain reverse current (Note 1)	I_{DR}	—	—	—	5	A
Pulse drain reverse current (Note 1)	I_{DRP}	—	—	—	15	A
Forward voltage (diode)	V_{DSF}	$I_{DR} = 5\text{ A}, V_{GS} = 0\text{ V}$	—	—	-1.9	V
Reverse recovery time	t_{rr}	$I_{DR} = 5\text{ A}, V_{GS} = 0\text{ V}$	—	520	—	ns
Reverse recovered charge	Q_{rr}	$dI_{DR} / dt = 100\text{ A} / \mu\text{s}$	—	10.4	—	μC

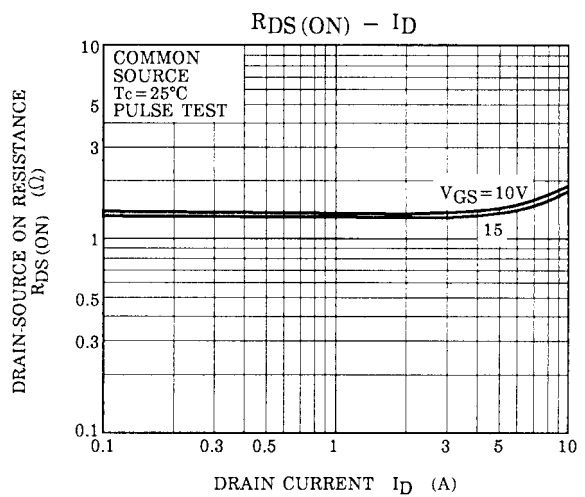
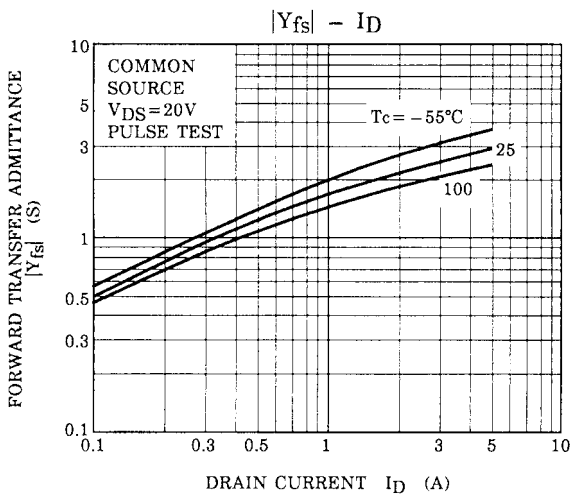
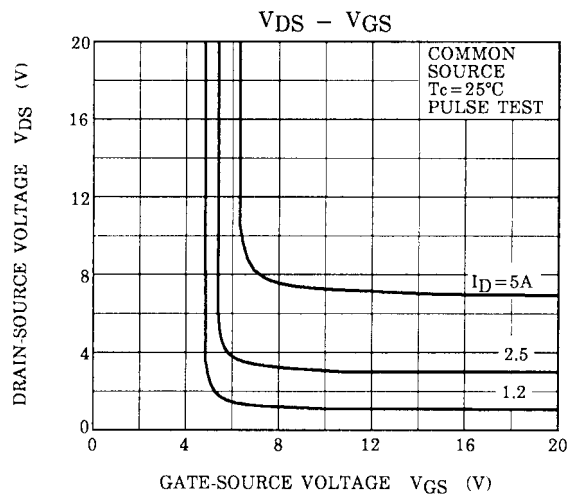
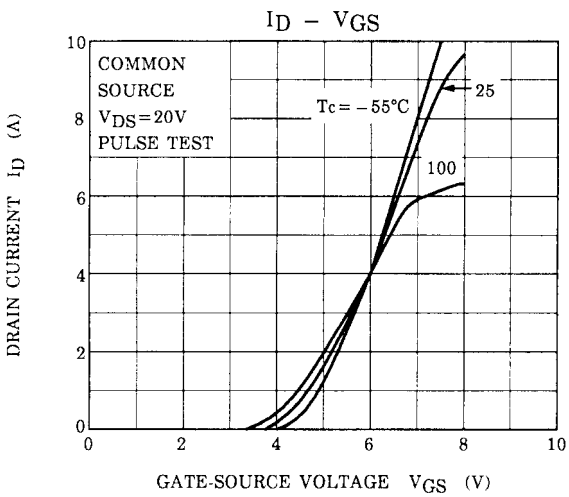
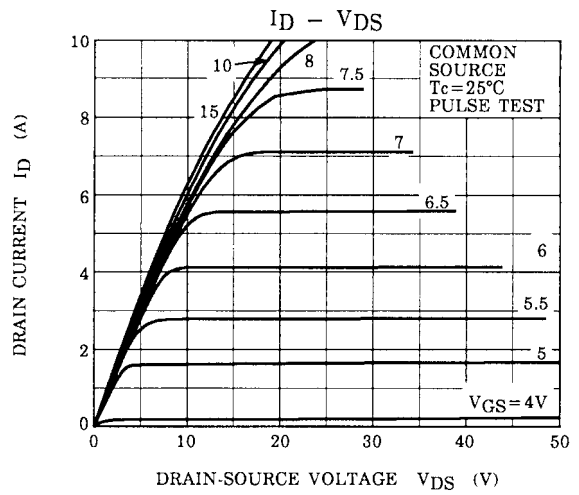
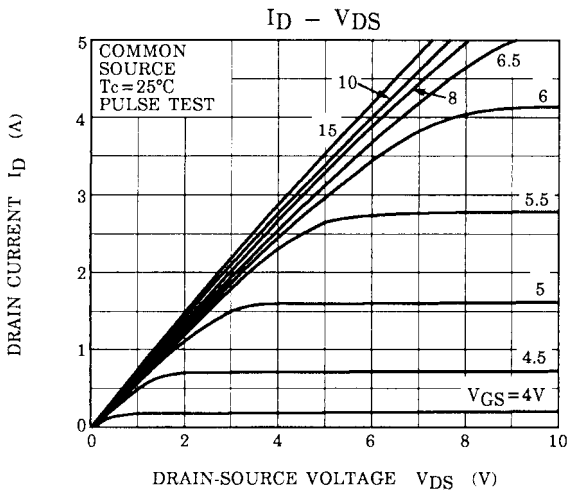
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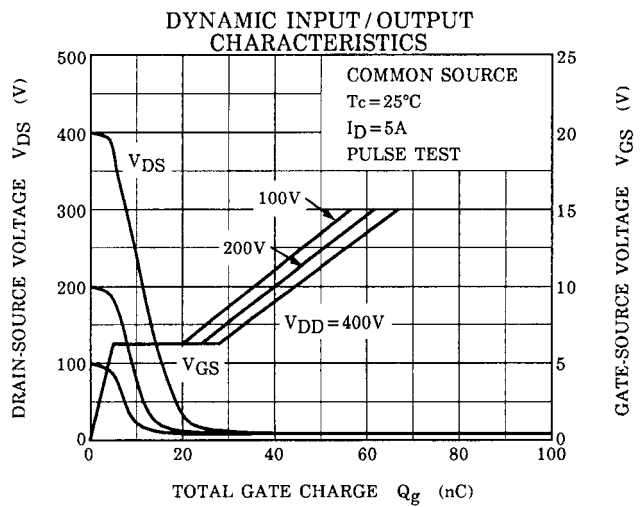
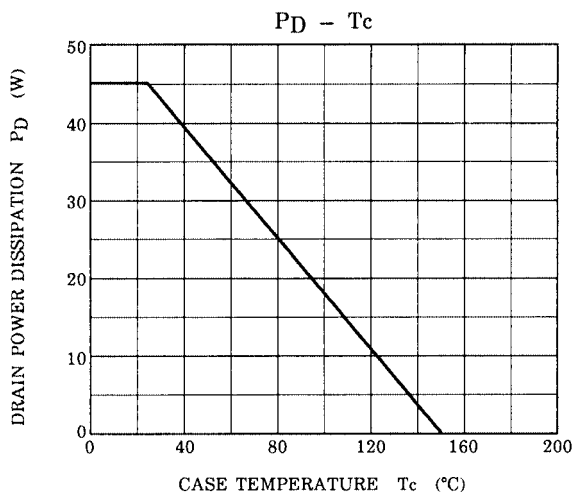
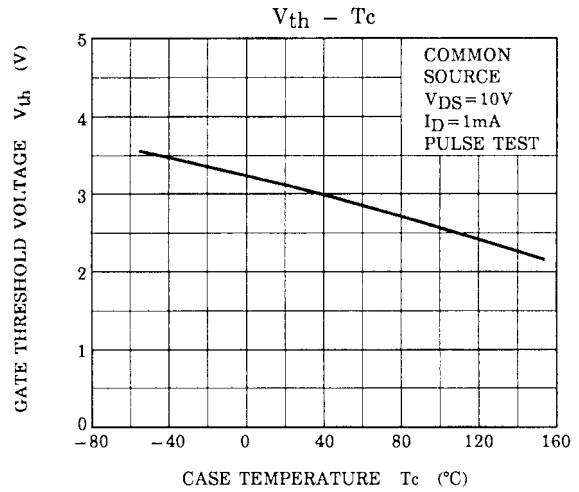
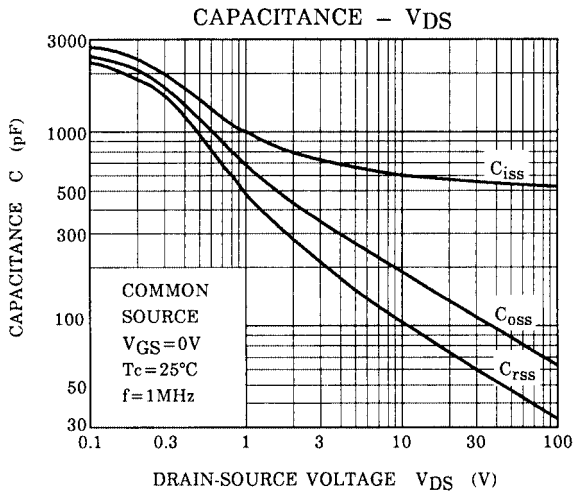
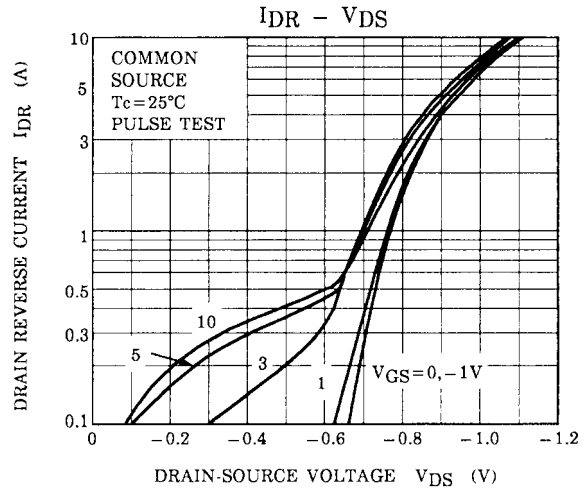
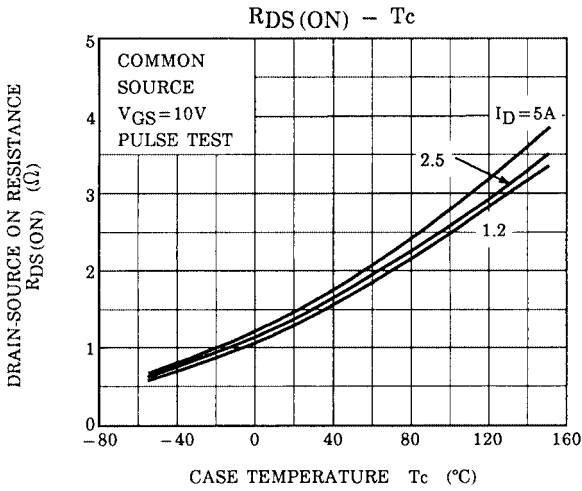


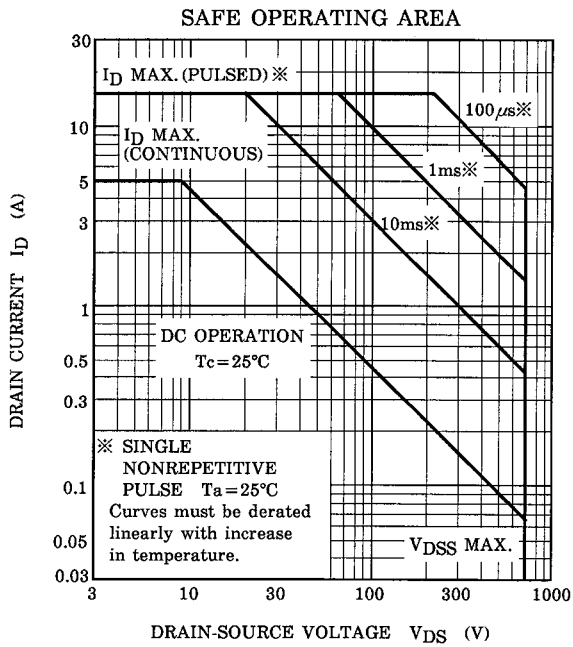
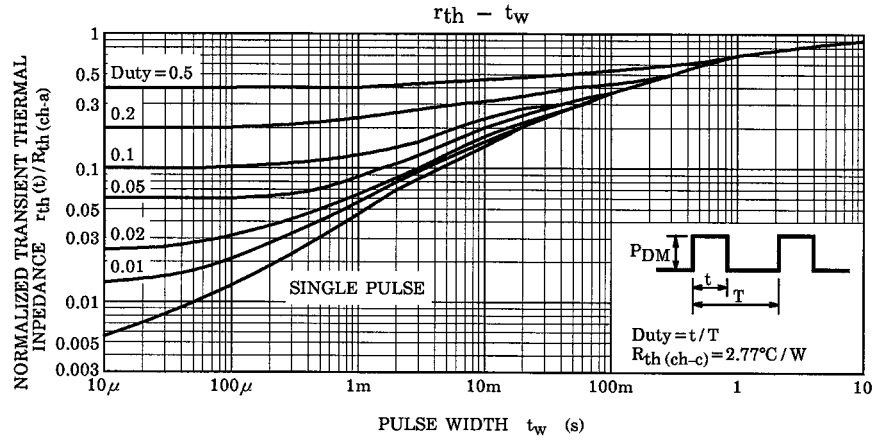
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







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