

TOSHIBA Field Effect Transistor Silicon N Channel MOS Type (π-MOSII)<sup>5</sup>

## 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	$V_{GSS}$	$\pm 30$	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	$^\circ\text{C}$

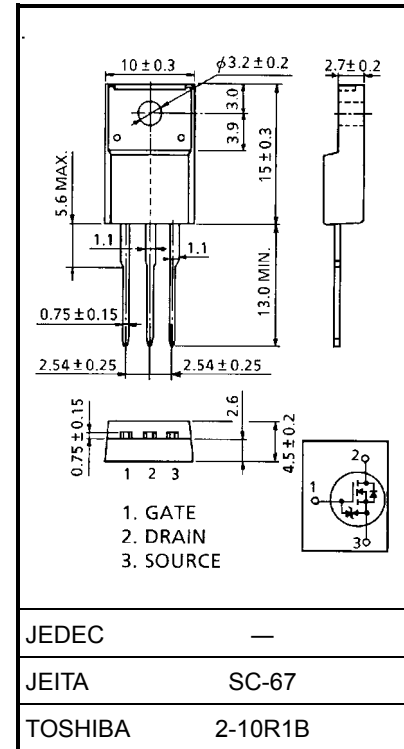
### Thermal Characteristics

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

Note 1: Please use devices on condition that the channel temperature is below  $150^\circ\text{C}$ .

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

Unit: mm



Weight: 1.9 g (typ.)

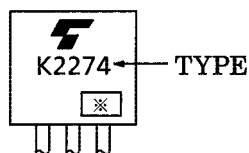
## Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		$I_{GSS}$	$V_{GS} = \pm 30\text{ V}, V_{DS} = 0\text{ V}$	—	—	$\pm 100$	nA
Drain cut-off current		$I_{DSS}$	$V_{DS} = 640\text{ V}, V_{GS} = 0\text{ V}$	—	—	300	$\mu\text{A}$
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	$\Omega$
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><math>I_D = 2\text{ A}</math> <math>V_{GS} = 10\text{ V}</math> <math>V_{GS} = 0\text{ V}</math> <math>50\Omega</math> <math>R_L = 200\Omega</math> <math>V_{DD} = 400\text{ V}</math> Duty <math>\leq 1\%</math>, <math>t_W = 10\mu\text{s}</math></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	—	$\mu\text{C}$

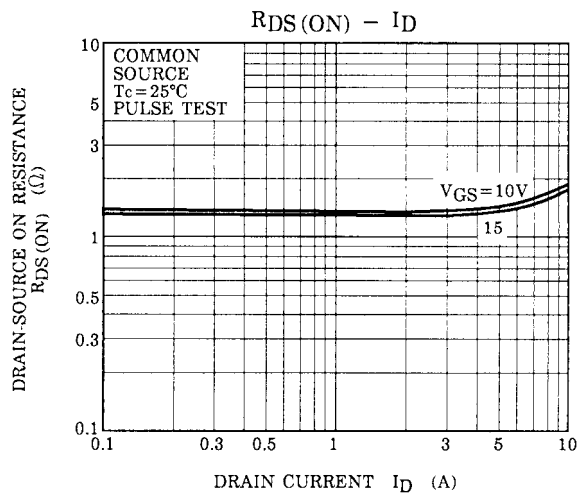
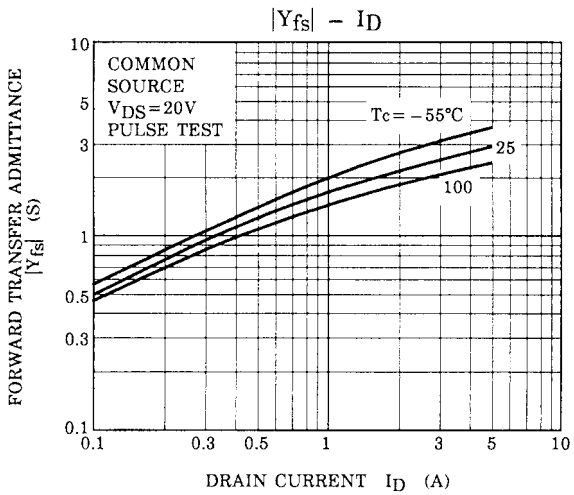
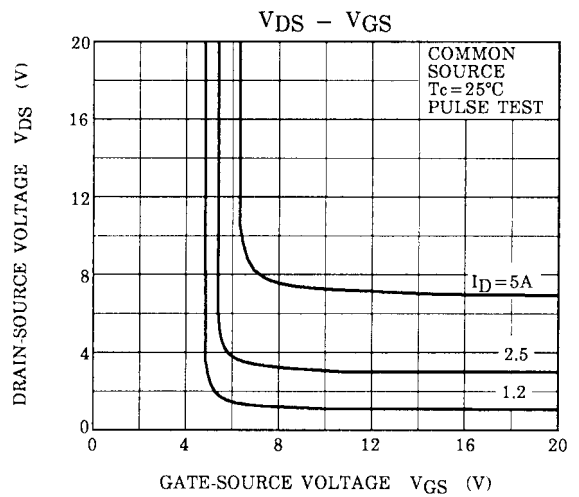
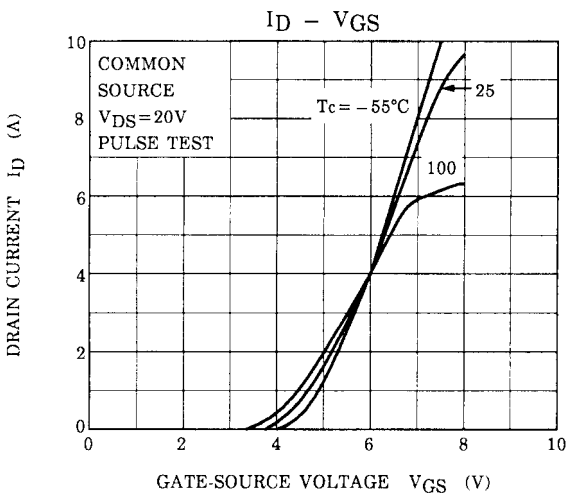
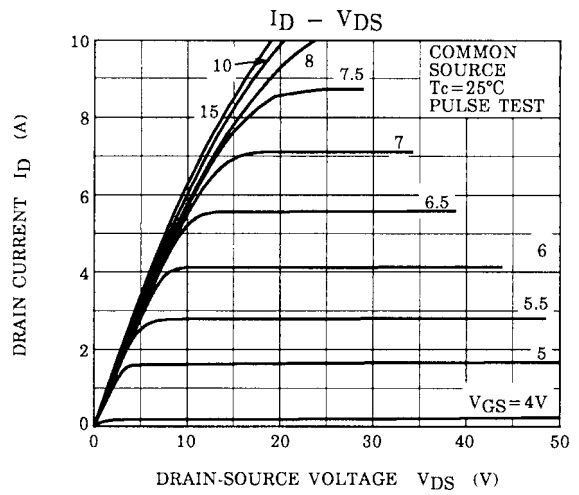
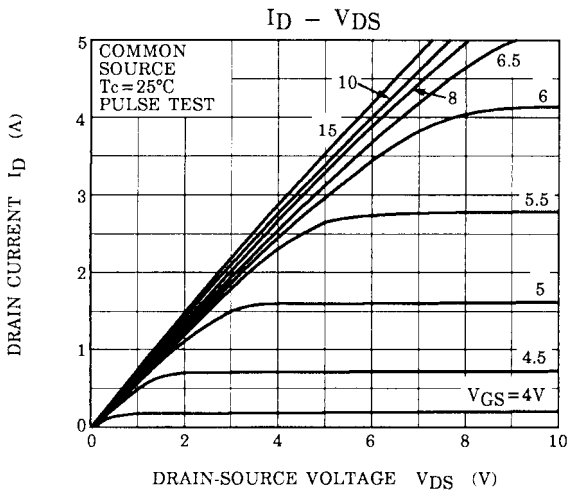
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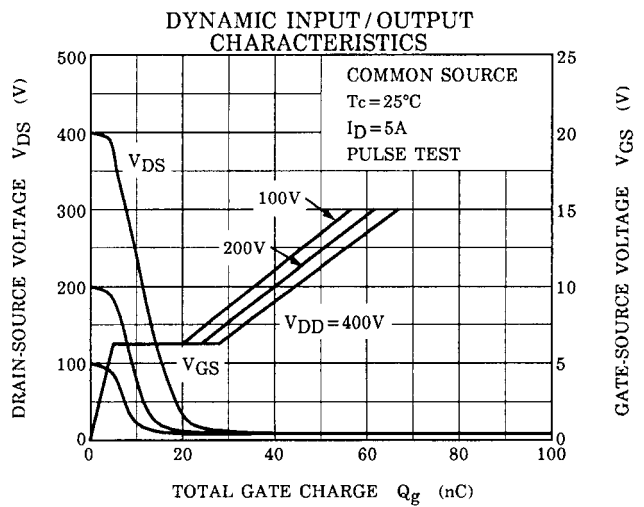
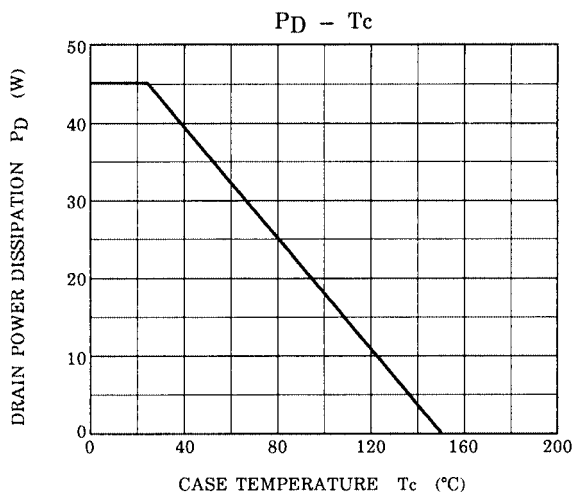
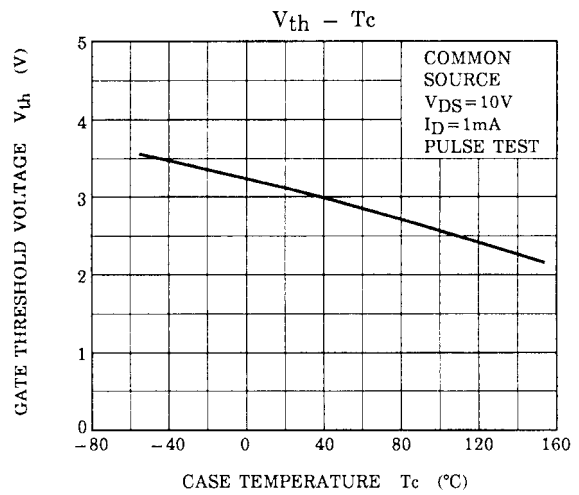
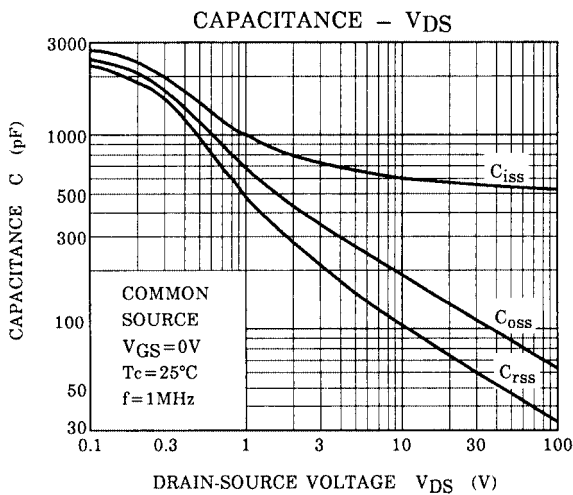
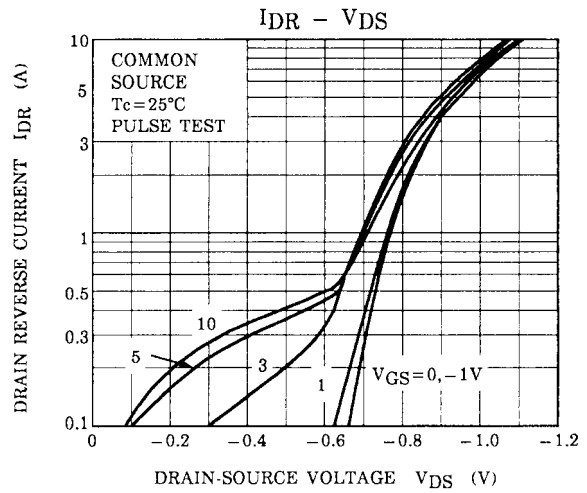
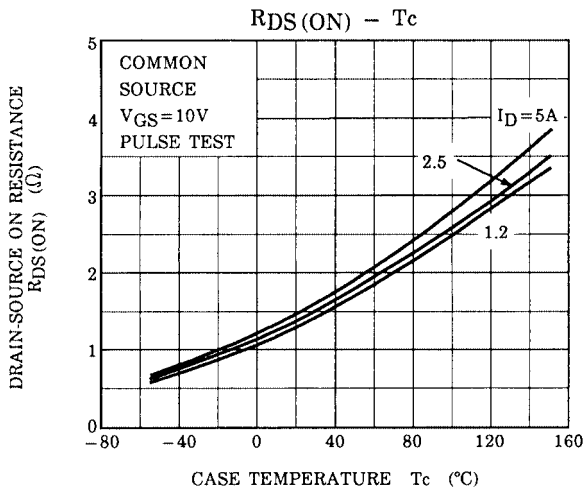


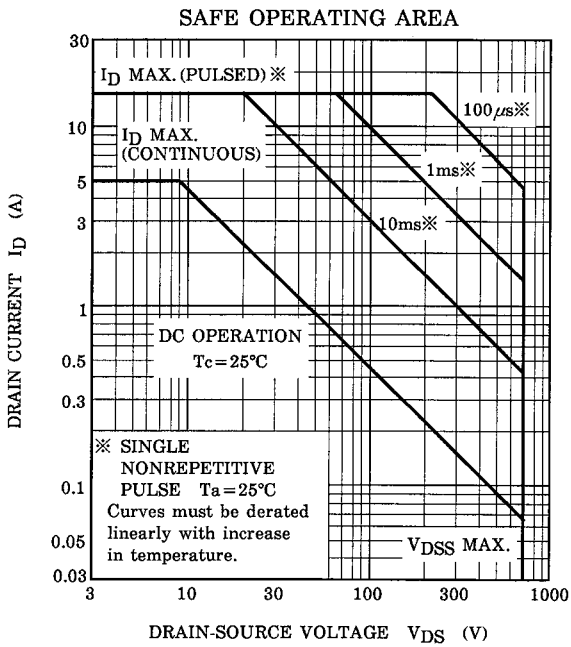
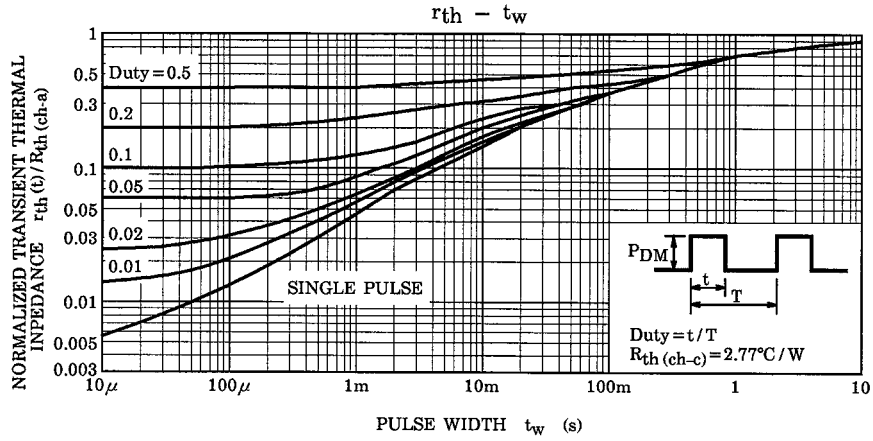
※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)







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