

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

2SK1489

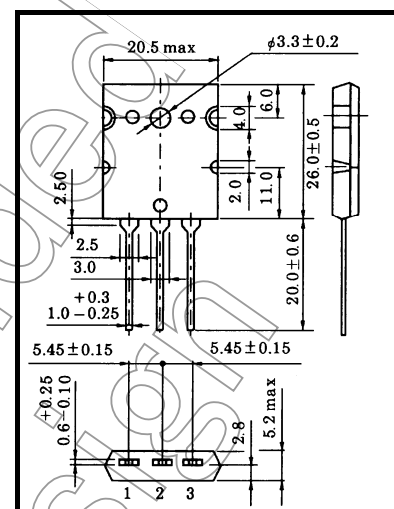
Chopper Regulator Applications

Unit: mm

- Low drain-source ON resistance : $R_{DS(ON)} = 0.8 \Omega$ (typ.)
- High forward transfer admittance : $|Y_{fs}| = 6.0 \text{ S}$ (typ.)
- Low leakage current : $I_{DSS} = 300 \mu\text{A}$ (max) ($V_{DS} = 800 \text{ V}$)
- Enhancement mode : $V_{th} = 1.5 \text{ to } 3.5 \text{ V}$ ($V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$)

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

Characteristics		Symbol	Rating	Unit
Drain-source voltage		V_{DSS}	1000	V
Drain-gate voltage ($R_{GS} = 20 \text{ k}\Omega$)		V_{DGR}	1000	V
Gate-source voltage		V_{GSS}	± 30	V
Drain current	DC (Note 1)	I_D	12	A
	Pulse (Note 1)	I_{DP}	36	
Drain power dissipation ($T_c = 25^\circ\text{C}$)		P_D	200	W
Channel temperature		T_{ch}	150	$^\circ\text{C}$
Storage temperature range		T_{stg}	-55 to 150	$^\circ\text{C}$



1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

JEDEC	—
JEITA	—
TOSHIBA	2-21F1B

Weight: 9.75 g (typ.)

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc.).

Thermal Characteristics

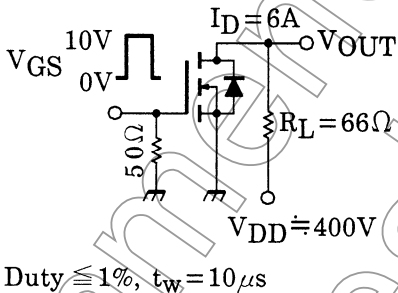
Characteristics	Symbol	Max	Unit
Thermal resistance, channel to case	$R_{th(ch-c)}$	0.625	$^\circ\text{C} / \text{W}$
Thermal resistance, channel to ambient	$R_{th(ch-a)}$	35.7	$^\circ\text{C} / \text{W}$

Note 1: Ensure that the channel temperature does not exceed 150°C .

This transistor is an electrostatic-sensitive device.

Please handle with caution.

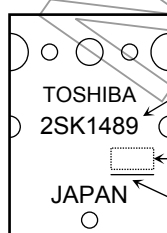
Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		I_{GSS}	$V_{GS} = \pm 25 \text{ V}, V_{DS} = 0 \text{ V}$	—	—	± 100	nA
Drain cut-off current		I_{DSS}	$V_{DS} = 800 \text{ V}, V_{GS} = 0 \text{ V}$	—	—	300	μA
Drain-source breakdown voltage		$V_{(BR)DSS}$	$I_D = 10 \text{ mA}, V_{GS} = 0 \text{ V}$	1000	—	—	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		$R_{DS(ON)}$	$V_{GS} = 10 \text{ V}, I_D = 6 \text{ A}$	—	0.8	1.0	Ω
Forward transfer admittance		$ Y_{fs} $	$V_{DS} = 20 \text{ V}, I_D = 6 \text{ A}$	4.0	6.0	—	S
Input capacitance		C_{iss}	$V_{DS} = 25 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$	—	2000	—	pF
Reverse transfer capacitance		C_{rss}		—	220	—	
Output capacitance		C_{oss}		—	360	—	
Switching time	Rise time	t_r	 $V_{GS} = 10\text{V}, 0\text{V}$ $I_D = 6\text{A}$ $R_L = 66\Omega$ $V_{DD} \approx 400\text{V}$ $\text{Duty} \leq 1\%, t_w = 10\mu\text{s}$	—	100	—	ns
	Turn-on time	t_{on}		—	140	—	
	Fall time	t_f		—	150	—	
	Turn-off time	t_{off}		—	500	—	
Total gate charge (Gate-source plus gate-drain)		Q_g	$V_{DD} \approx 400 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 12 \text{ A}$	—	110	—	nC
Gate-source charge		Q_{gs}		—	50	—	
Gate-drain ("miller") charge		Q_{gd}		—	60	—	

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

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Continuous drain reverse current (Note 1)	I_{DR}	—	—	—	12	A
Pulse drain reverse current (Note 1)	I_{DRP}	—	—	—	36	A
Forward voltage (diode)	V_{DSF}	$I_{DR} = 12 \text{ A}, V_{GS} = 0 \text{ V}$	—	—	-1.6	V

Marking



Part No. (or abbreviation code)

Lot No.

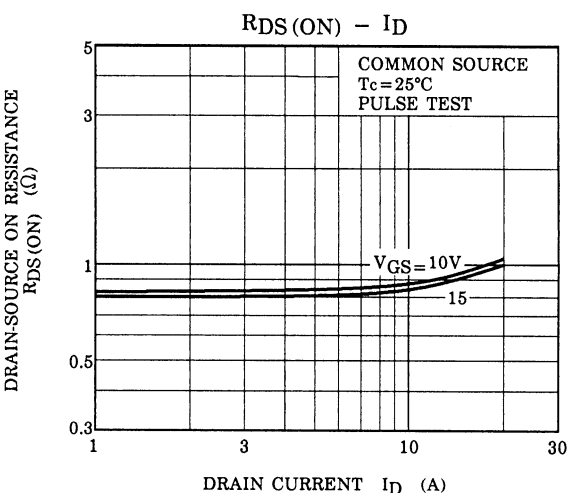
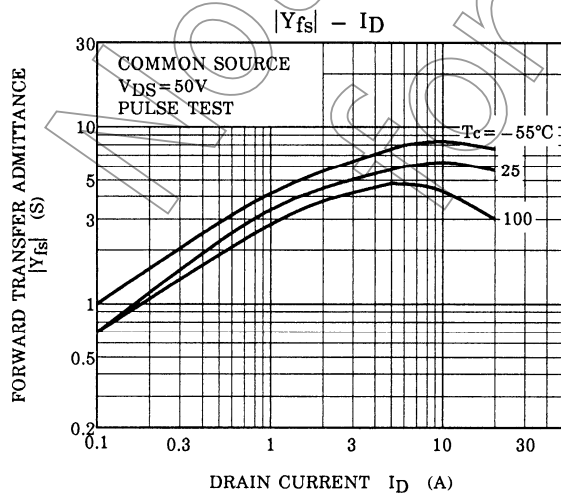
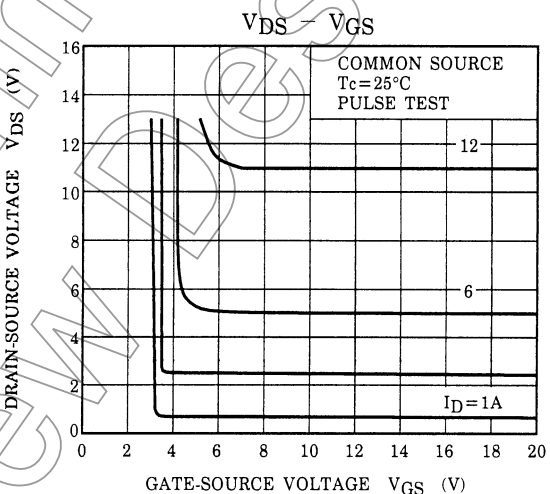
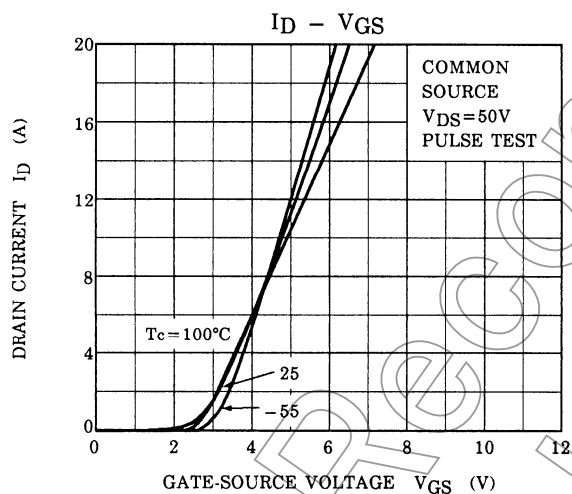
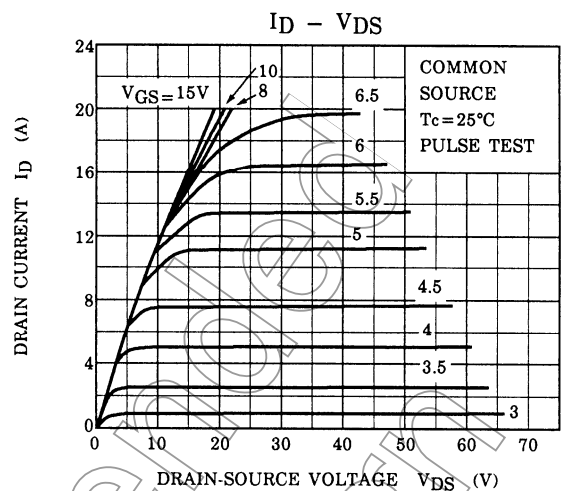
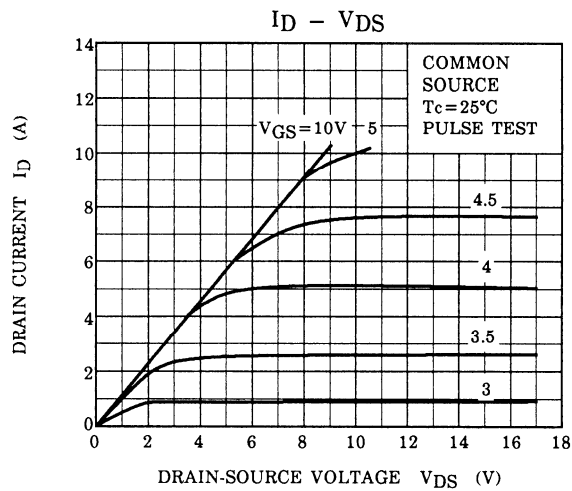
Note 2

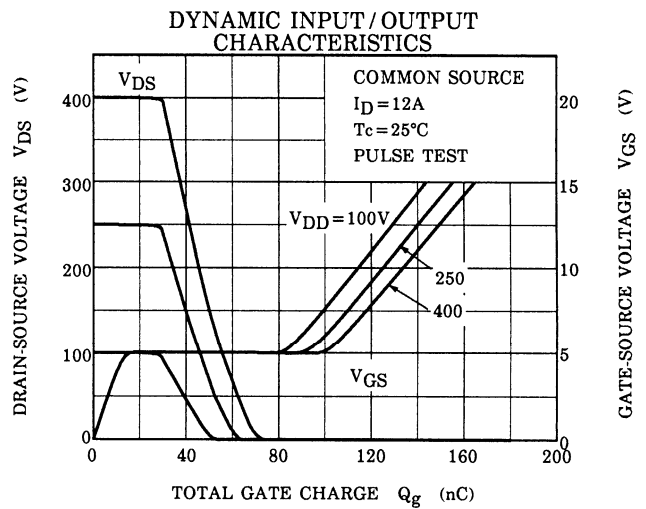
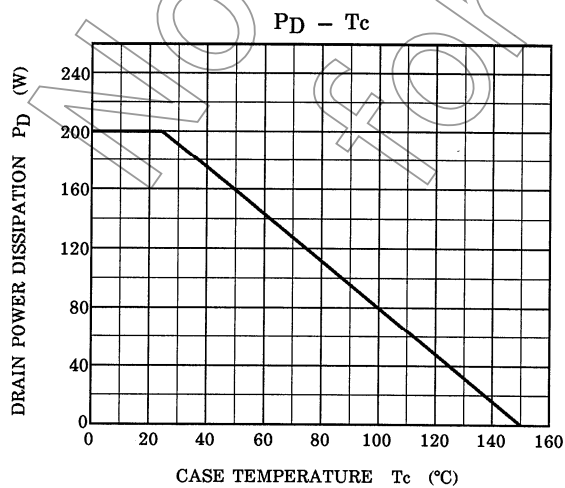
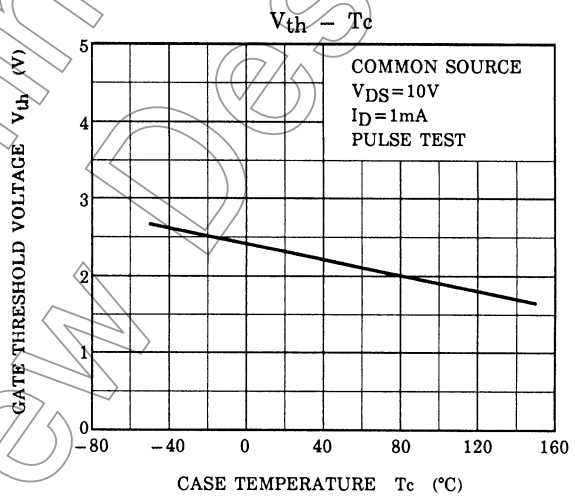
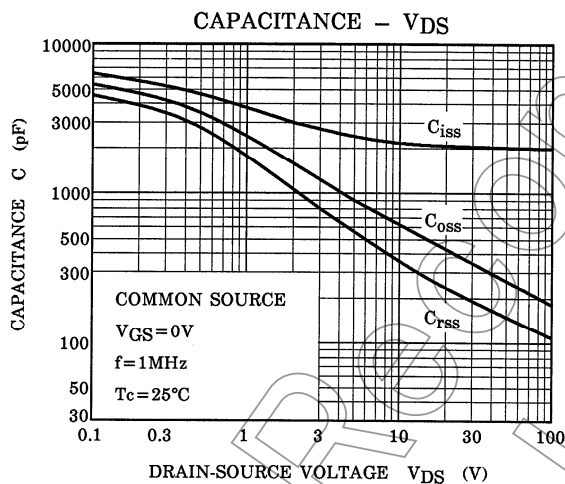
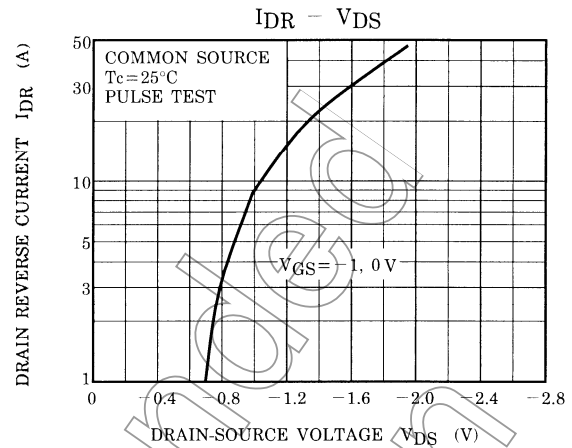
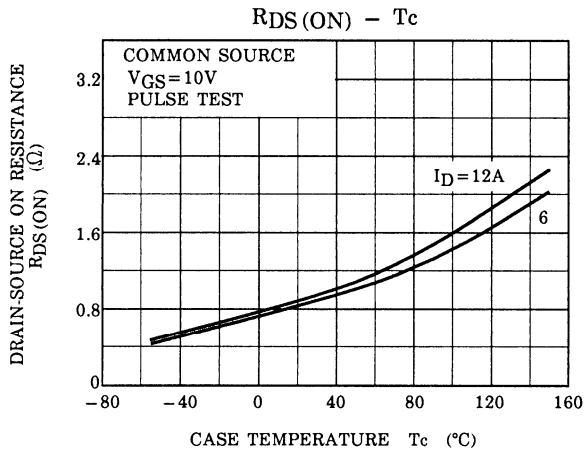
Note 2: A line under a Lot No. identifies the indication of product Labels.

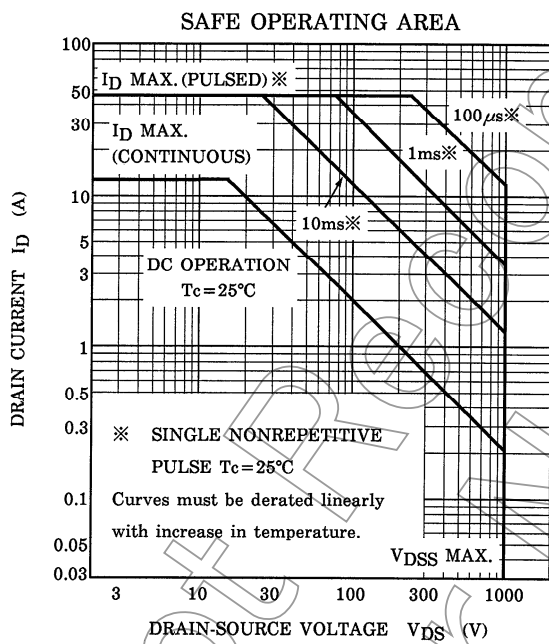
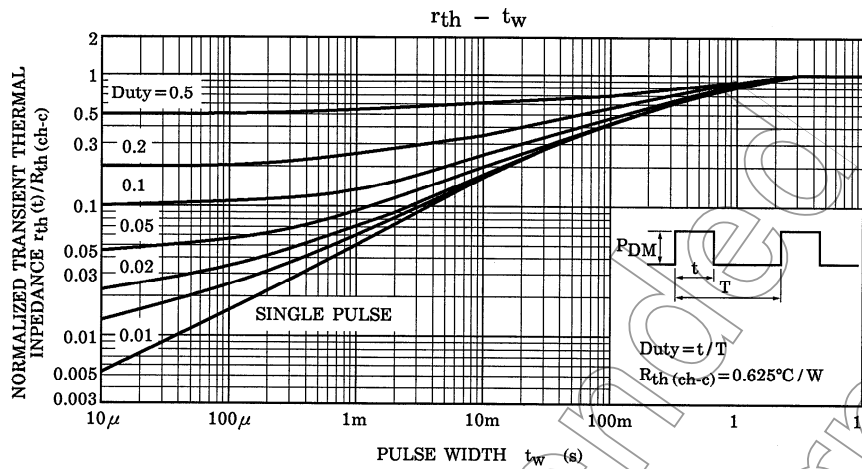
Not underlined: [[Pb]]/INCLUDES > MCV

Underlined: [[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

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