

TOSHIBA Field Effect Transistor Silicon N Channel MOS Type (π-MOSIII⁵)

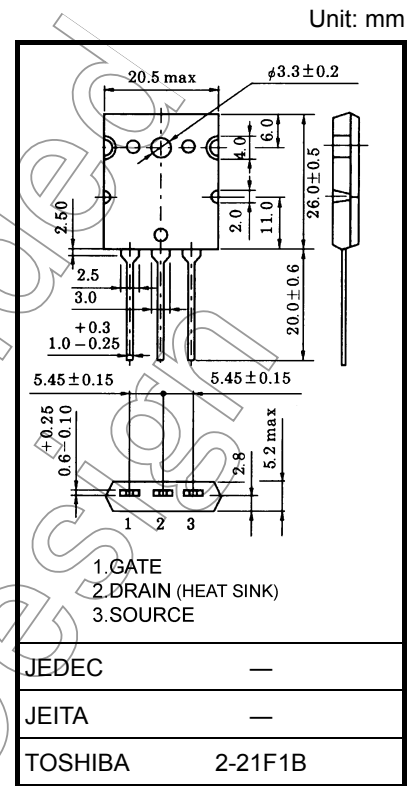
2SK1486

Chopper Regulator, DC-DC Converter and Motor Drive Applications

- Low drain-source ON resistance : $R_{DS(ON)} = 0.08 \Omega$ (typ.)
- High forward transfer admittance : $|Y_{fs}| = 14 S$ (typ.)
- Low leakage current : $I_{DSS} = 300 \mu A$ (max) ($V_{DS} = 300 V$)
- Enhancement mode : $V_{th} = 2.0$ to $4.0 V$ ($V_{DS} = 10 V, I_D = 1 mA$)

Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit
Drain-source voltage		V_{DSS}	300	V
Drain-gate voltage ($R_{GS} = 20 k\Omega$)		V_{DGR}	300	V
Gate-source voltage		V_{GSS}	± 30	V
Drain current	DC (Note 1)	I_D	32	A
	Pulse (Note 1)	I_{DP}	128	
Drain power dissipation ($T_c = 25^\circ C$)		P_D	200	W
Channel temperature		T_{ch}	150	°C
Storage temperature range		T_{stg}	-55 to 150	°C



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	°C / W
Thermal resistance, channel to ambient	$R_{th(ch-a)}$	35.7	°C / W

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

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

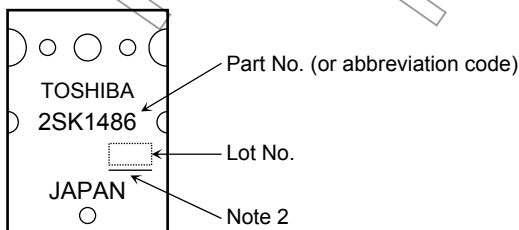
Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		I_{GSS}	$V_{GS} = \pm 30\text{ V}, V_{DS} = 0\text{ V}$	—	—	± 100	nA
Drain cut-off current		I_{DSS}	$V_{DS} = 300\text{ V}, V_{GS} = 0\text{ V}$	—	—	300	μA
Drain-source breakdown voltage		$V_{(BR)DSS}$	$I_D = 10\text{ mA}, V_{GS} = 0\text{ V}$	300	—	—	V
Gate threshold voltage		V_{th}	$V_{DS} = 10\text{ V}, I_D = 1\text{ mA}$	2.0	—	4.0	V
Drain-source ON resistance		$R_{DS(ON)}$	$I_D = 16\text{ A}, V_{GS} = 10\text{ V}$	—	0.08	0.095	Ω
Forward transfer admittance		$ Y_{fs} $	$V_{DS} = 10\text{ V}, I_D = 16\text{ A}$	10	14	—	S
Input capacitance		C_{iss}	$V_{DS} = 10\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$	—	3500	—	pF
Reverse transfer capacitance		C_{rss}		—	800	—	
Output capacitance		C_{oss}		—	1250	—	
Switching time	Rise time	t_r		—	255	—	ns
	Turn-on time	t_{on}		—	325	—	
	Fall time	t_f		—	280	—	
	Turn-off time	t_{off}		Duty $\leq 1\%$, $t_w = 10\mu\text{s}$	—	540	
Total gate charge (Gate-source plus gate-drain)		Q_g	$V_{DD} \approx 240\text{ V}, V_{GS} = 10\text{ V}, I_D = 32\text{ A}$	—	140	—	nC
Gate-source charge		Q_{gs}		—	60	—	
Gate-drain ("miller") charge		Q_{gd}		—	80	—	

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

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Continuous drain reverse current (Note 1)	I_{DR}	—	—	—	32	A
Pulse drain reverse current (Note 1)	I_{DRP}	—	—	—	128	A
Forward voltage (diode)	V_{DSF}	$I_{DR} = 32\text{ A}, V_{GS} = 0\text{ V}$	—	—	-1.8	V
Reverse recovery time	t_{rr}	$I_{DR} = 32\text{ A}, V_{GS} = 0\text{ V}$	—	615	—	ns
Reverse recovered charge	Q_{rr}	$dI_{DR} / dt = 100\text{ A} / \mu\text{s}$	—	6.8	—	μC

Marking

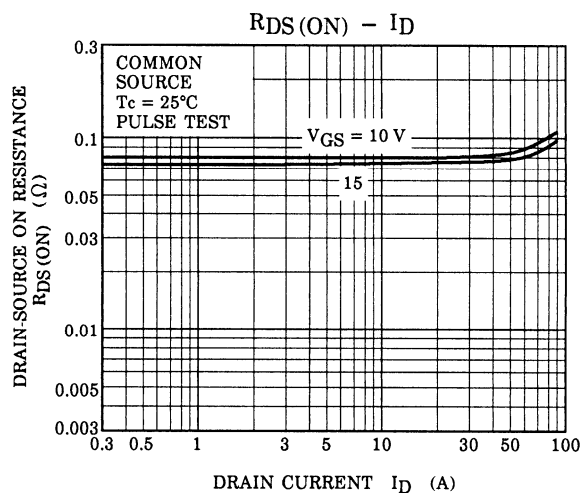
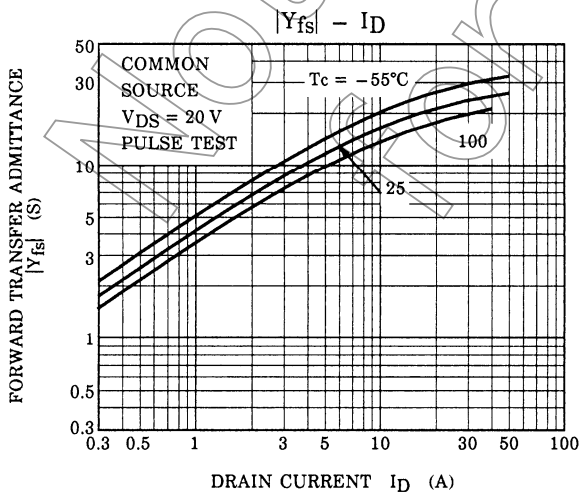
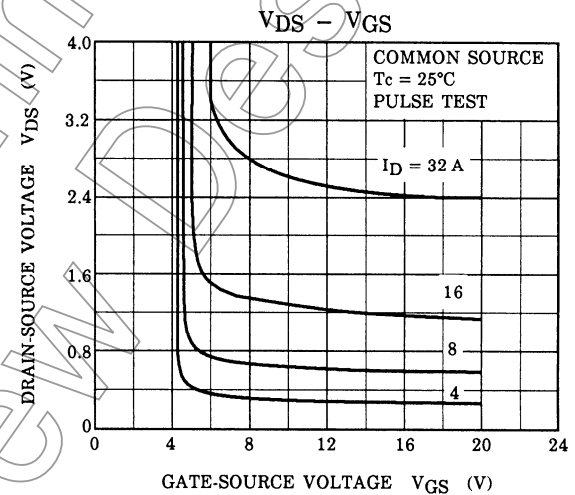
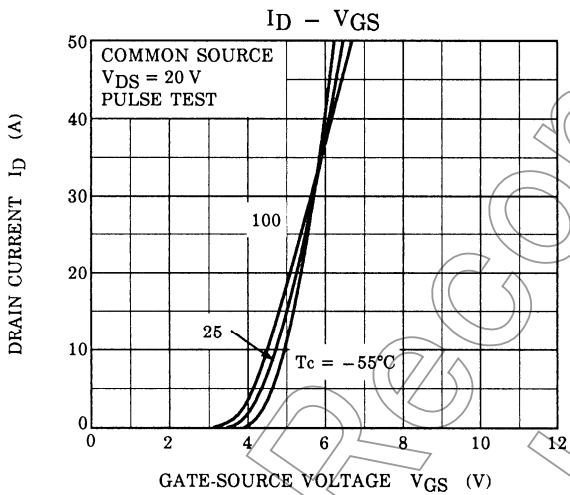
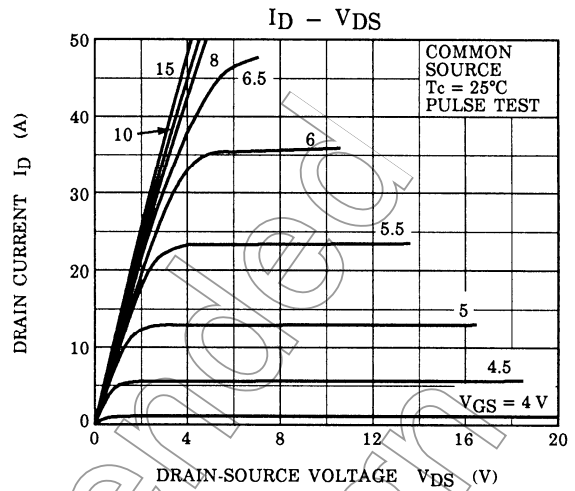
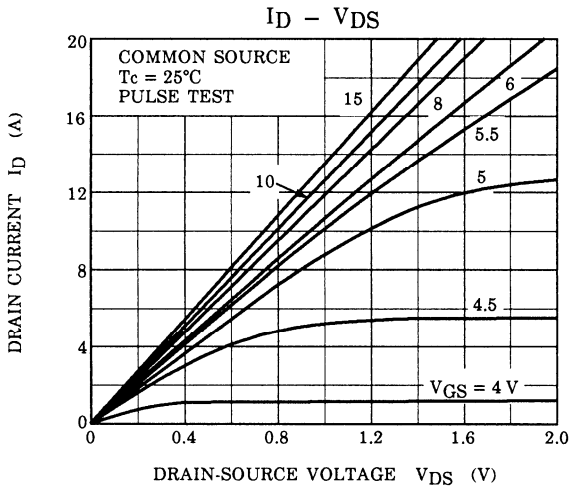


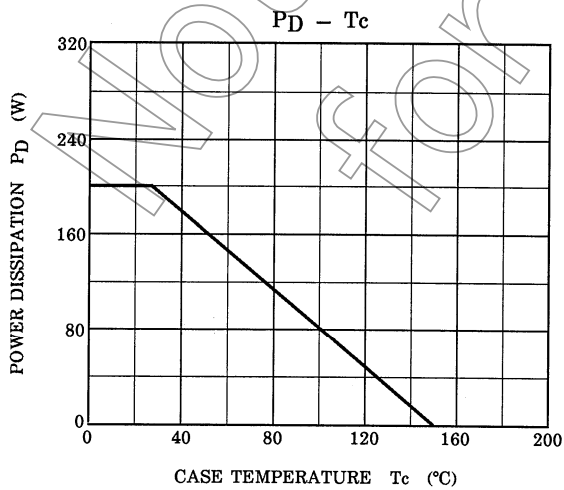
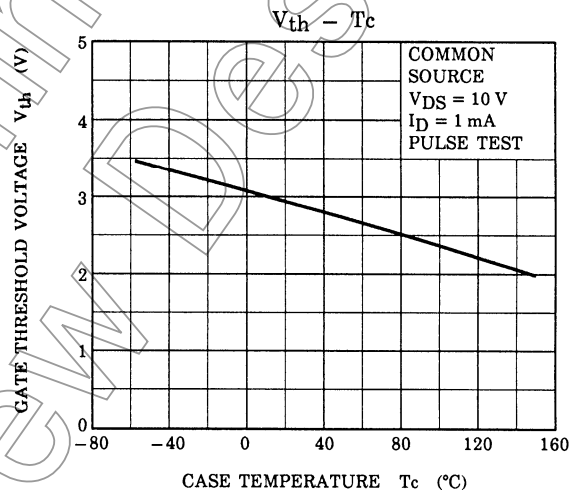
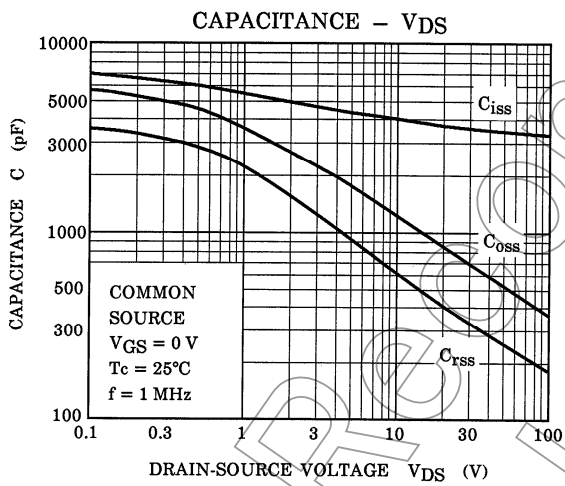
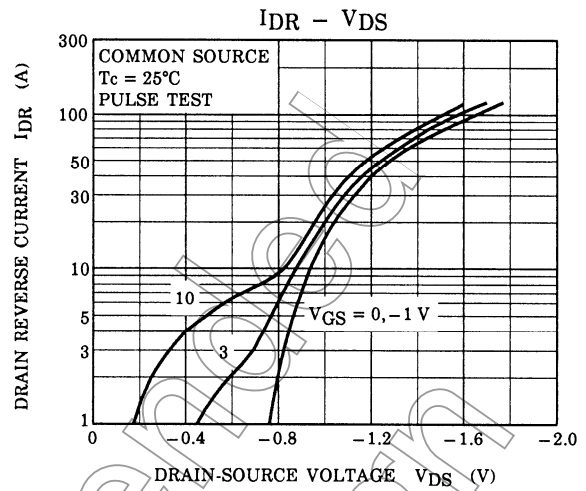
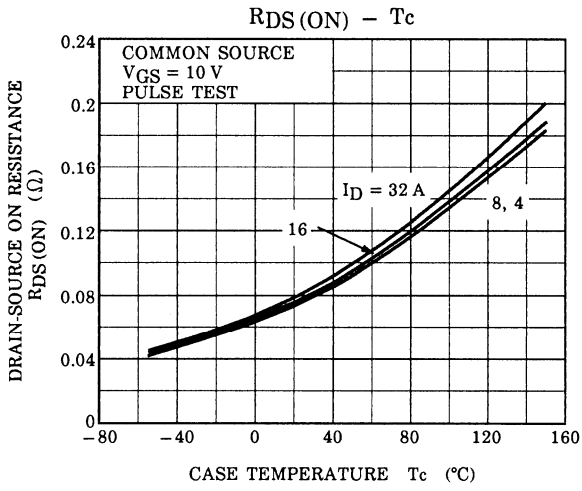
Note 2: A line under a Lot No. identifies the indication of product Labels.

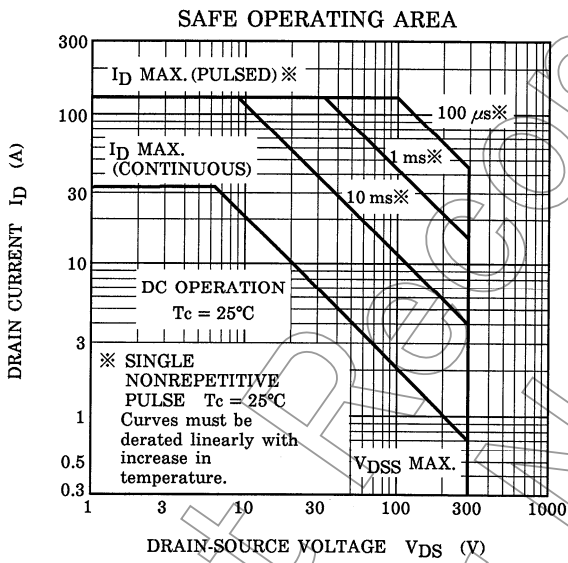
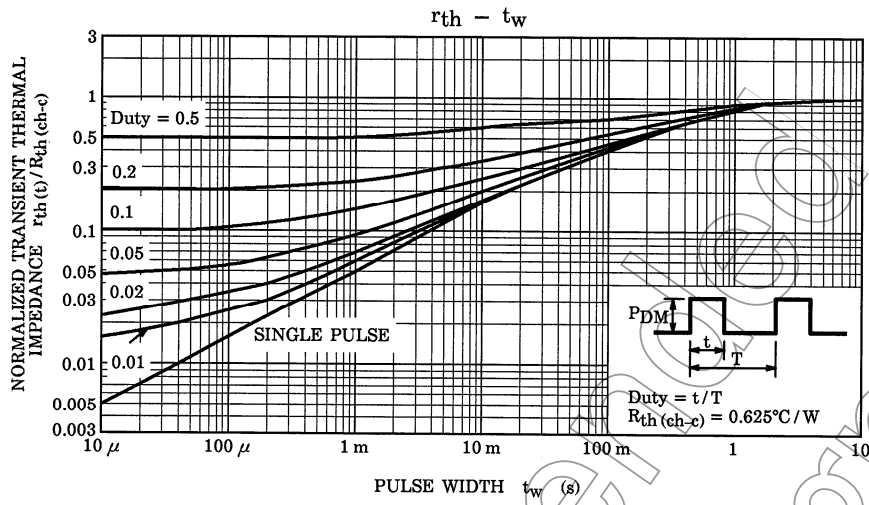
Not underlined: [[Pb]]/INCLUDES > MCV

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