

TOSHIBA Field Effect Transistor Silicon P Channel MOS Type (L²-π-MOSV)

2SJ465

DC-DC Converter, Relay Drive and Motor Drive Applications

- 2.5-V gate drive
- Low drain-source ON resistance : $R_{DS(ON)} = 0.54 \Omega$ (typ.)
- High forward transfer admittance : $|Y_{fs}| = 1.7 S$ (typ.)
- Low leakage current : $I_{DSS} = -100 \mu A$ (max) ($V_{DS} = -16 V$)
- Enhancement mode : $V_{th} = -0.5 \sim -1.1 V$ ($V_{DS} = -10 V, I_D = -200 \mu A$)

Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Drain-source voltage	V_{DSS}	-16	V
Drain-gate voltage ($R_{GS} = 20 k\Omega$)	V_{DGR}	-16	V
Gate-source voltage	V_{GSS}	±8	V
Drain current	DC (Note 1)	I_D	-2
	Pulse (Note 1)	I_{DP}	-6
Drain power dissipation	P_D	0.5	W
Drain power dissipation (Note 2)	P_D	1.5	W
Channel temperature	T_{ch}	150	°C
Storage temperature range	T_{stg}	-55~150	°C

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

Note 2: Mounted on a ceramic substrate (25.4 mm × 25.4 mm × 0.8 mm)

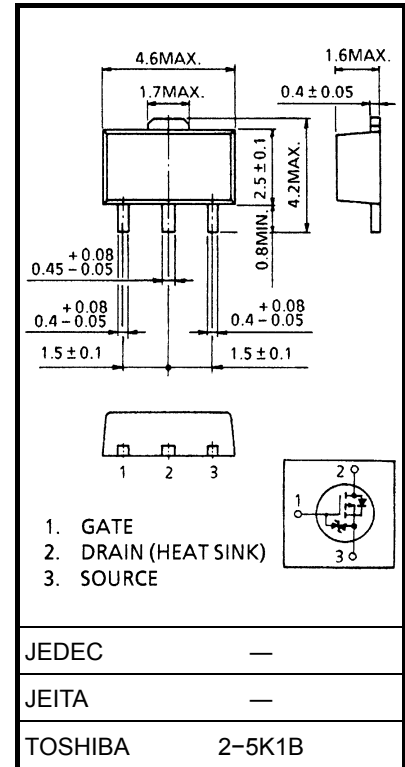
Note 3: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) 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 ambient	$R_{th(ch-a)}$	250	°C / W

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

Unit: mm



Weight: 0.05 g (typ.)

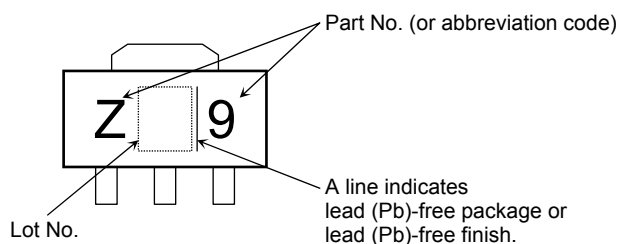
Electrical Characteristics (Ta = 25°C)

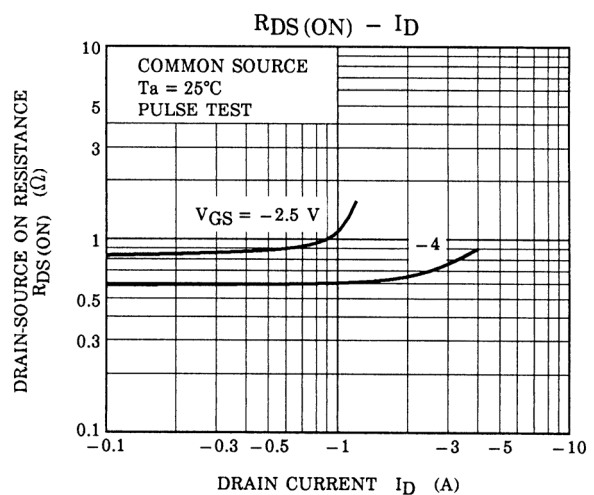
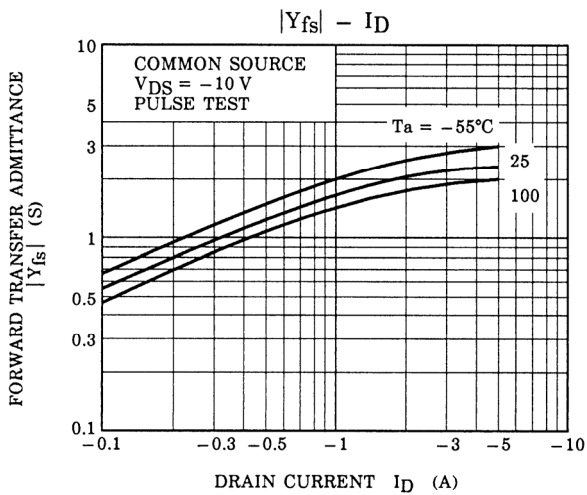
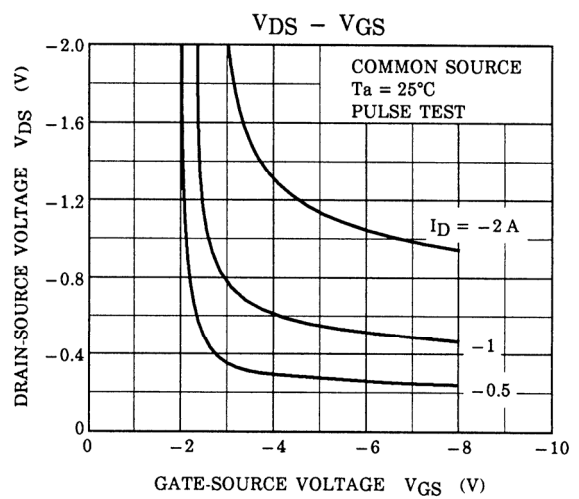
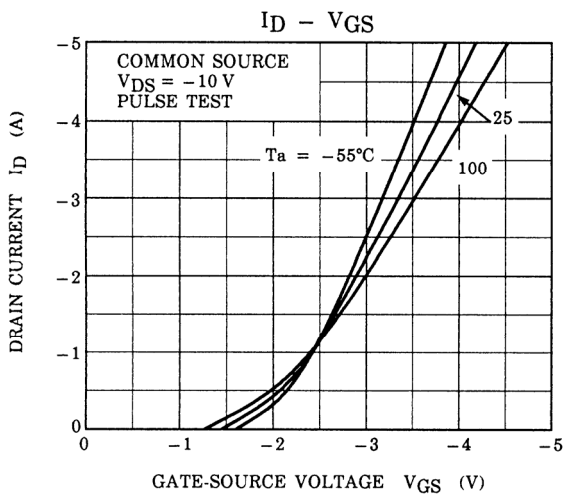
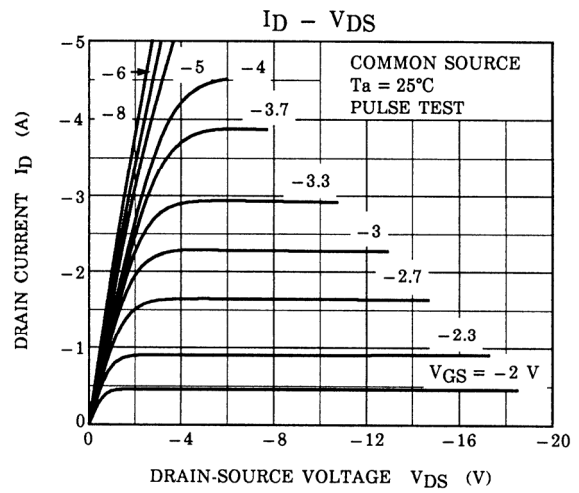
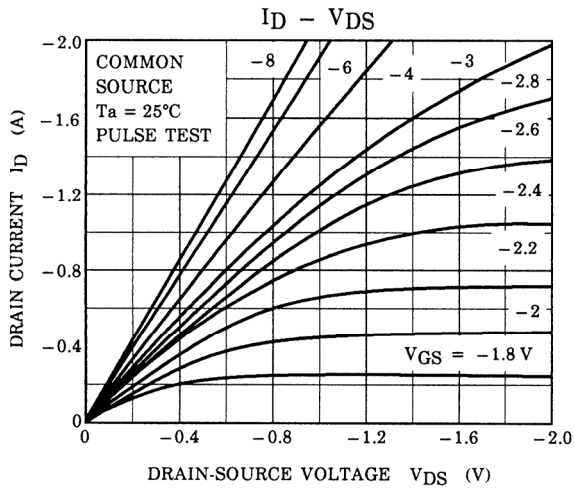
Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		I_{GSS}	$V_{GS} = \pm 6.5 \text{ V}, V_{DS} = 0 \text{ V}$	—	—	± 10	μA
Drain cut-off current		I_{DSS}	$V_{DS} = -16 \text{ V}, V_{GS} = 0 \text{ V}$	—	—	-100	μA
Drain-source breakdown voltage		$V_{(BR)DSS}$	$I_D = -10 \text{ mA}, V_{GS} = 0 \text{ V}$	-16	—	—	V
Gate threshold voltage		V_{th}	$V_{DS} = -10 \text{ V}, I_D = -200 \mu\text{A}$	-0.5	—	-1.1	V
Drain-source ON resistance		$R_{DS(ON)}$	$V_{GS} = -2.5 \text{ V}, I_D = -0.5 \text{ A}$	—	0.86	1.0	Ω
			$V_{GS} = -4 \text{ V}, I_D = -1 \text{ A}$	—	0.54	0.71	
Forward transfer admittance		$ Y_{fs} $	$V_{DS} = -10 \text{ V}, I_D = -1 \text{ A}$	0.8	1.7	—	S
Input capacitance		C_{iss}	$V_{DS} = -10 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$	—	270	—	pF
Reverse transfer capacitance		C_{rss}		—	25	—	
Output capacitance		C_{oss}		—	115	—	
Switching time	Rise time	t_r	<p>Duty $\leq 1\%$, $t_w = 10 \mu\text{s}$</p>	—	200	—	ns
	Turn-on time	t_{on}		—	250	—	
	Fall time	t_f		—	200	—	
	Turn-off time	t_{off}		—	500	—	
Total gate charge (Gate-source plus gate-drain)		Q_g	$V_{DD} \approx -16 \text{ V}, V_{GS} = -5 \text{ V}, I_D = -2 \text{ A}$	—	5	—	nC
Gate-source charge		Q_{gs}		—	3.2	—	
Gate-drain ("miller") charge		Q_{gd}		—	1.8	—	

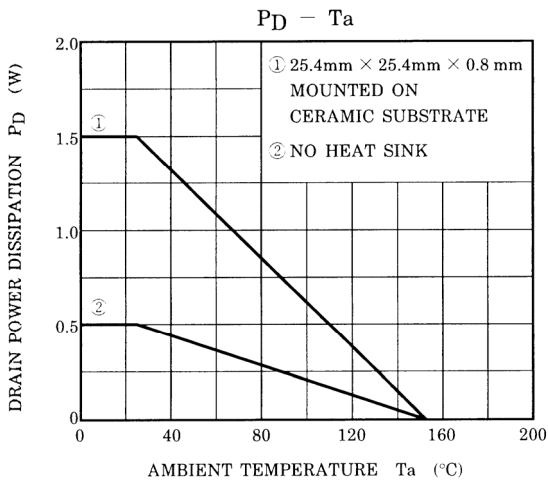
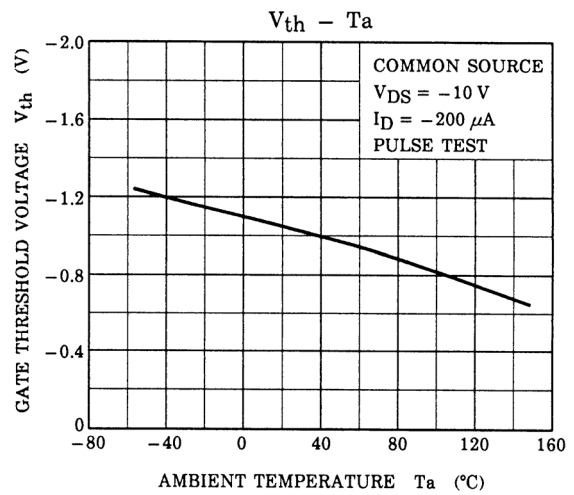
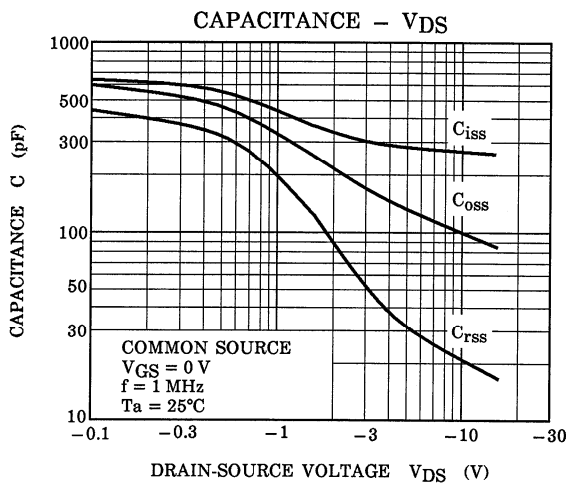
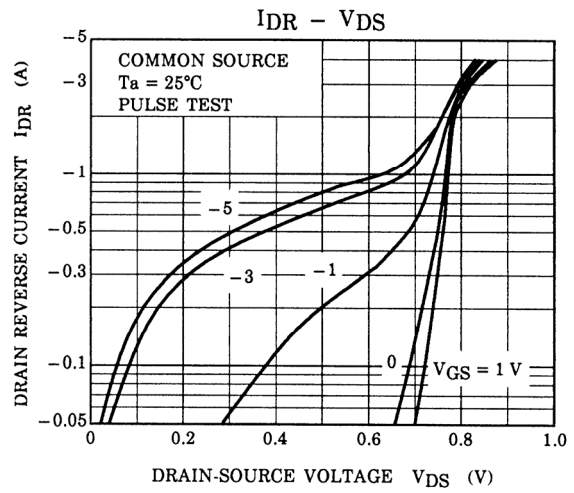
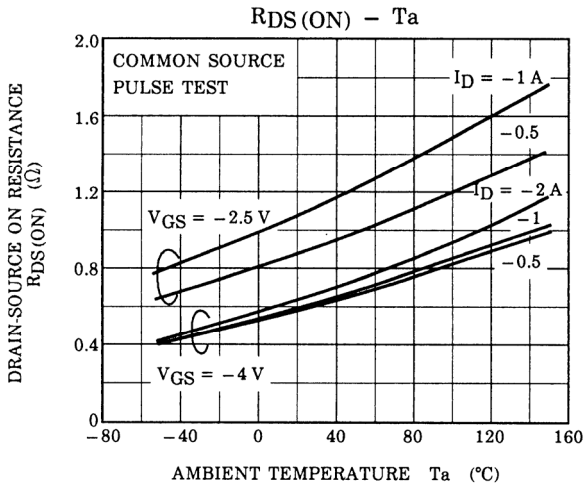
Source-Drain Ratings and Characteristics (Ta = 25°C)

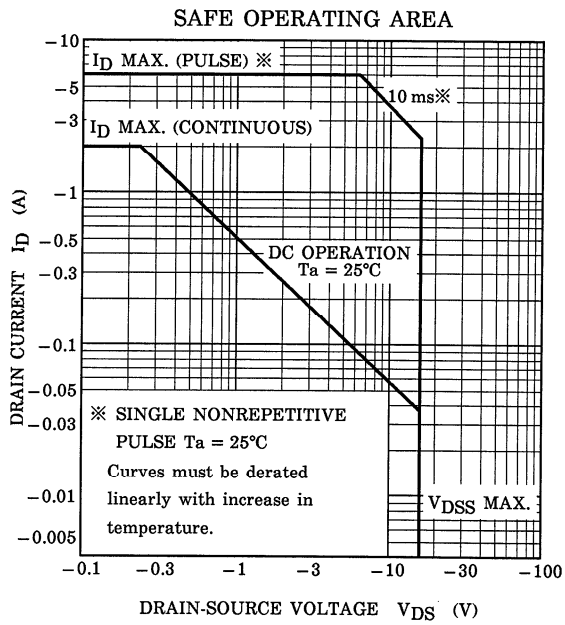
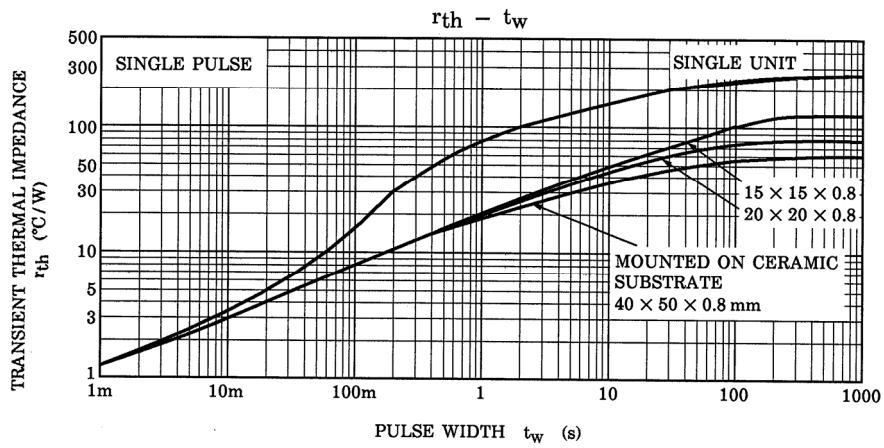
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Continuous drain reverse current (Note 1)	I_{DR}	—	—	—	-2	A
Pulse drain reverse current (Note 1)	I_{DRP}	—	—	—	-6	A
Forward voltage (diode)	V_{DSF}	$I_{DR} = -2 \text{ A}, V_{GS} = 0 \text{ V}$	—	—	1.7	V
Reverse recovery time	t_{rr}	$I_{DR} = -2 \text{ A}, V_{GS} = 0 \text{ V}$	—	130	—	ns
Reverse recovery charge	Q_{rr}	$di_{DR} / dt = 50 \text{ A} / \mu\text{s}$	—	0.13	—	μC

Marking









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20070701-EN

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