TOSHIBA Field Effect Transistor Silicon P Channel MOS Type ($L^2-\pi$ -MOSV)

2SJ360

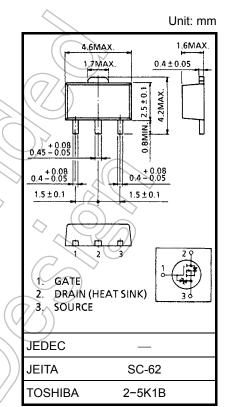
High Speed, High current Switching Applications

Chopper Regulator, DC–DC Converter and Motor Drive Applications

- 4-V gate drive
- Low drain-source ON resistance : $R_{DS (ON)} = 0.55 \Omega$ (typ.)
- High forward transfer admittance : |Y_{fs}| = 0.9 S (typ.)
- Low leakage current : $I_{DSS} = -100 \ \mu A \ (max) \ (V_{DS} = -60 \ V)$
- Enhancement mode : $V_{th} = -0.8$ to -2.0 V ($V_{DS} = -10$ V, $I_D = -1$ mA)

Absolute Maximum Ratings (Ta = 25°C)

Characteris	tics	Symbol	Rating	Unit
Drain-source voltage		V _{DSS}	-60	V
Drain-gate voltage (R _{GS} = 20 k Ω)		V _{DGR}	-60	\checkmark
Gate-source voltage		V _{GSS}	±20	> v
Drain current	DC (Note 1)	ID		А
	Pulse (Note 1)	I _{DP}	-4	A
Drain power dissipation	1	PD <	0.5	XV
Drain power dissipation (Note 2)		PD	1.5	W
Channel temperature		T _{ch}	150	°C
Storage temperature range		Tstg	-55 to 150	°C



Weight: 0.05 g (typ.)

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)

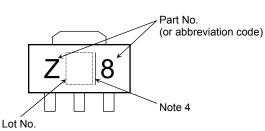
Note 3: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

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

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Note 4: A line to the right of a Lot No. identifies the indication of product Labels. Without a line: [[Pb]]/INCLUDES > MCV With a line: [[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product. The RoHS is the Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

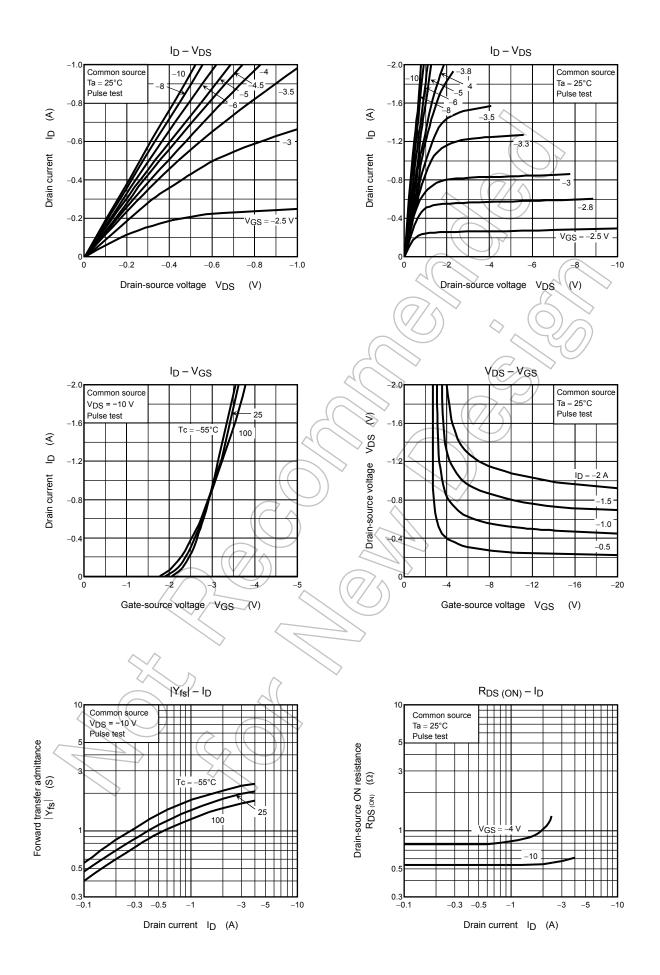
Electrical Characteristics (Ta = 25°C)

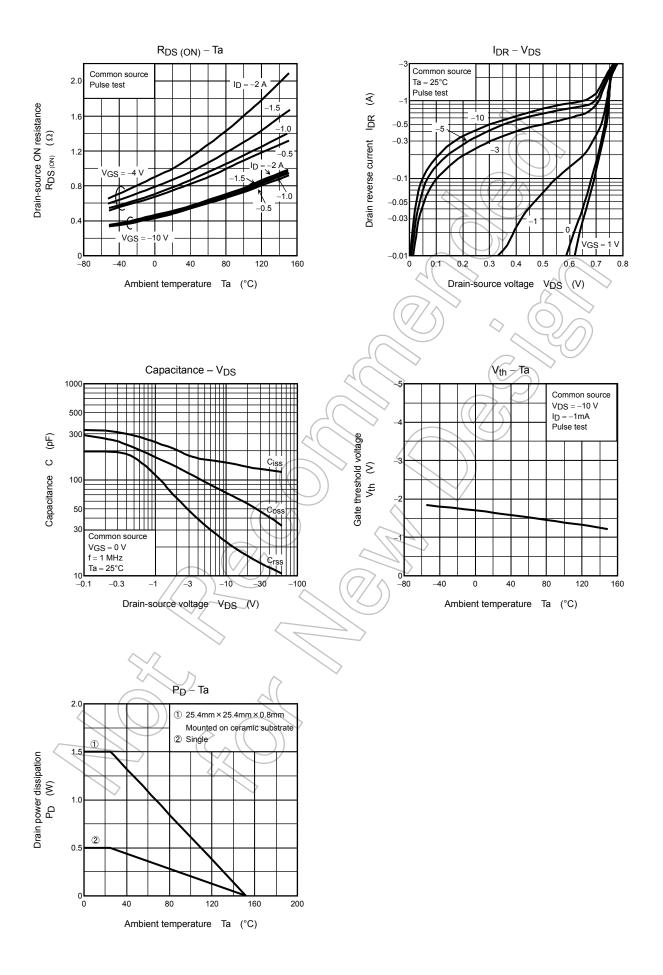
				>			
Charac	cteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Gate leakage cu	ırrent	IGSS	$V_{GS} = \pm 16 \text{ V}, \text{ V}_{DS} = 0 \text{ V}$	—	A.	±10	μA
Drain cut-off cu	rrent	I _{DSS}	$V_{DS} = -60 \text{ V}, \text{ V}_{GS} = 0 \text{ V}$	{	6-\	_100	μA
Drain-source br voltage	eakdown	V (BR) DSS	$I_{D} = -10 \text{ mA}, V_{GS} = 0 \text{ V}$	-60	R) —	V
Gate threshold v	/oltage	V _{th}	$V_{DS} = -10 \text{ V}, \text{ I}_{D} = -1 \text{ mA}$	-0.8		-2.0	V
Drain-source ON resistance		R _{DS (ON)}	$V_{GS} = -4 V_{*} I_{D} = -0.5 A$		0.86	1.2	Ω
			$V_{GS} = -10 V$, $I_D = -0.5 A$		0.55	0.73	
Forward transfer	r admittance	Y _{fs}	$V_{DS} = -10 V, I_{D} = -0.5 A$	0.5	1.0	_	S
Input capacitance	xe	C _{iss}		_	155	_	
Reverse transfe	r capacitance	C _{rss}	$V_{DS} = -10 \text{ V}, \text{ V}_{GS} = 0 \text{ V}, \text{ f} = 1 \text{ MHz}$	_	22		pF
Output capacita	nce	Coss		_	75		
Switching time	Rise time	tr	$V_{GS} \stackrel{OV}{10V} \qquad I_D = -0.5A \qquad V_{OUT}$	_	17		
	Turn-on time	ton	P P $R_L = 60\Omega$		20	_	ns
	Fall time	tf			20	_	115
	Turn-off time	t _{off}	$V_{DD} \approx -30V$ Duty $\leq 1\%$, t _w = 10 µs		100		
Total gate char plus gate-drain)	ge (Gate-source	Qg	V _{DD} ≈ -48 V, V _{GS} = -10 V,	_	6.5		0
Gate-source ch	arge	Qgs	$I_D = -1 A$	—	4.5		nC
Gate-drain ("mil	ller") charge	Qgd		_	2.0	—	

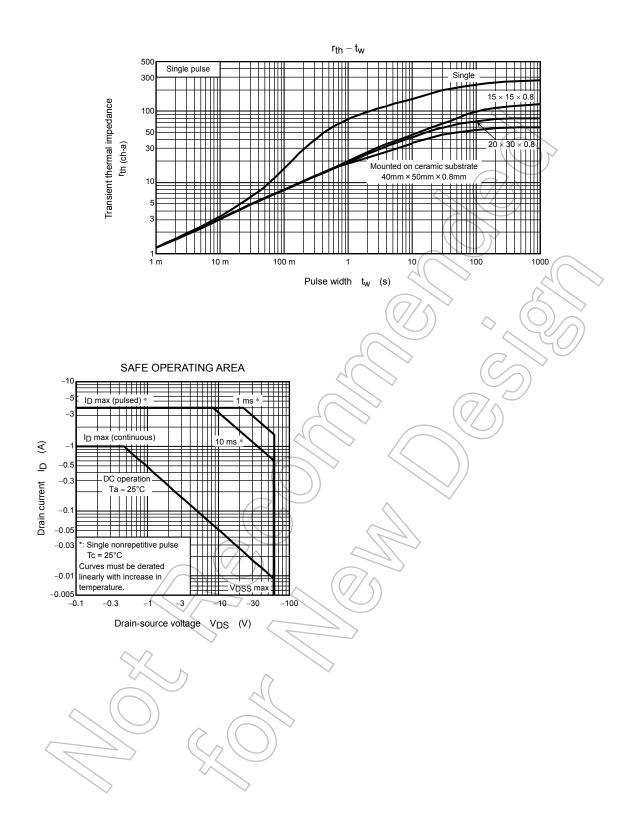
Source-Drain Ratings and Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Continuous drain reverse current (Note 1)	I _{DR}	—	_	_	-1	А
Pulse drain reverse current (Note 1)	I _{DRP}	—	_	_	-4	А
Forward voltage (diode)	V _{DSF}	$I_{DR} = -1 \text{ A}, \text{ V}_{GS} = 0 \text{ V}$	_	_	1.8	V
Reverse recovery time	t _{rr}	I _{DR} = −1 A, V _{GS} = 0 V dI _{DR} / dt = 50 A / μs		50		ns
Reverse recovery charge	Qrr			45		nC

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