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

2SJ516

Chopper Regulator, DC-DC Converter and Motor Drive Applications

• Low drain-source ON resistance : R_{DS} (ON) = 0.6 Ω (typ.)

• High forward transfer admittance : $|Y_{fs}| = 5.3 \text{ S (typ.)}$

• Low leakage current : $IDSS = -100 \mu A (max) (VDS = -250 V)$

• Enhancement-mode : $V_{th} = -1.5 \sim -3.5 \text{ V (V}_{DS} = -10 \text{ V, I}_{D} = -1 \text{ mA)}$

Maximum Ratings (Ta = 25°C)

Characteris	stics	Symbol	Rating	Unit
Drain-source voltage		V_{DSS}	-250	V
Drain-gate voltage (Ro	_{GS} = 20 kΩ)	V_{DGR}	-250	V
Gate-source voltage		V_{GSS}	±20	V
Drain current	DC (Note 1)	I _D	-6.5	Α
	Pulse (Note 1)	I _{DP}	-13	Α
Drain power dissipation	n (Tc = 25°C)	P _D	35	W
Single pulse avalanche	e energy (Note 2)	E _{AS}	157	mJ
Avalanche current		I _{AR}	-6.5	Α
Repetitive avalenche e	energy (Note 3)	E _{AR}	3.5	mJ
Channel temperature		T _{ch}	150	°C
Storage temperature ra	ange	T _{stg}	-55~150	°C

Weight: 1.9 g (typ.)

Thermal Characteristics

Characteristics	Symbol	Max	Unit
Thermal resistance, channel to case	R _{th (ch-c)}	3.57	°C/W
Thermal resistance, channel to ambient	R _{th (ch-a)}	62.5	°C/W

Note 1: Please use devices on condition that the channel temperature is below 150°C.

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Note 2: V_{DD} = -50 V, T_{ch} = 25°C (initial), L = 6.3 mH, R_G = 25 Ω , I_{AR} = -6.5 A

Note 3: Repetitive rating; Pulse width limited by maximum channel temperature.

This transistor is an electrostatic sensitive device.

Please handle with caution.

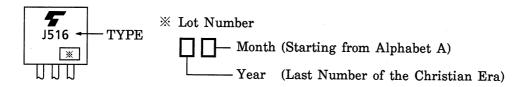
Electrical Characteristics (Ta = 25°C)

Charac	teristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Gate leakage cu	rrent	I _{GSS}	V _{GS} = ±16 V, V _{DS} = 0 V		_	±10	μΑ
Drain cut-off cur	rent	I _{DSS}	V _{DS} = -250 V, V _{GS} = 0 V	_	_	-100	μΑ
Drain-source breakdown volta	ge	V _{(BR) DSS}	$I_D = -10 \text{ mA}, V_{GS} = 0 \text{ V}$	-250	_	_	٧
Gate threshold v	roltage	V_{th}	$V_{DS} = -10 \text{ V}, I_D = -1 \text{ mA}$	-1.5	_	-3.5	V
Drain-source OI	N resistance	R _{DS} (ON)	$V_{GS} = -10 \text{ V}, I_D = -3 \text{ A}$	_	0.6	8.0	Ω
Forward transfer	admittance	Y _{fs}	V _{DS} = -10 V, I _D = -3 A	2.5	5.3	_	S
Input capacitanc	е	C _{iss}		_	1120	_	
Reverse transfer	erse transfer capacitance C_{rss} $V_{DS} = -10 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$		_	110	_	pF	
Output capacitance		Coss	1		320		_
Switching time	Rise time	t _r	$V_{GS} \xrightarrow{0V} I_{D} = -3A$ $V_{GS} \xrightarrow{10V} R_{L} = 33.3\Omega$ $V_{DD} = -100V$	_	17	_	
	Turn-on time	t _{on}		_	34	_	20
	Fall time	t _f		_	6	_	ns
	Turn-off time	t _{off}	Duty $\leq 1\%$, $t_{\mathbf{W}} = 10 \mu \text{s}$	_	71	_	
Total gate charge (Gate-source plus gate-drain)		Qg	V _{DD} ≈ -200 V, V _{GS} = -10 V,		29		nC
Gate-source charge		Q _{gs}	I _D = -6.5 A	_	19	_	
Gate-drain ("miller") charge		Q _{gd}		_	10	_	

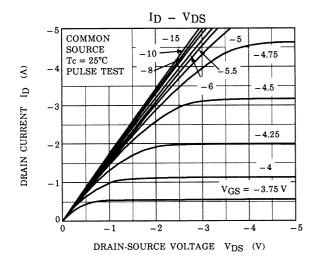
Source-Drain Ratings and Characteristics (Ta = 25°C)

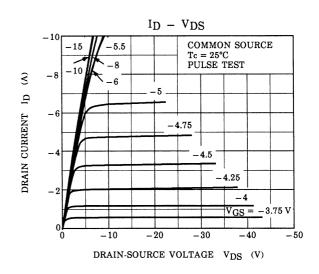
Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Continuous drain reverse current (Note 1)	I _{DR}	_	_	_	-6.5	Α
Pulse drain reverse current (Note 1)	I _{DRP}	_	_	_	-13	Α
Forward voltage (diode)	V _{DSF}	I _{DR} = -6.5 A, V _{GS} = 0 V	_	_	2.0	V
Reverse recovery time	t _{rr}	I _{DR} = -6.5 A, V _{GS} = 0 V	_	190	_	ns
Reverse recovery charge	Q _{rr}	dI _{DR} / dt = 100 Å / μs	-	2.1	1	μC

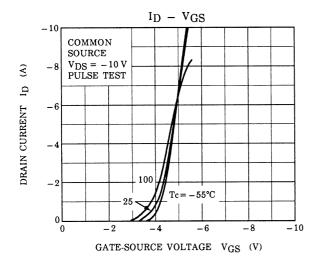
Marking

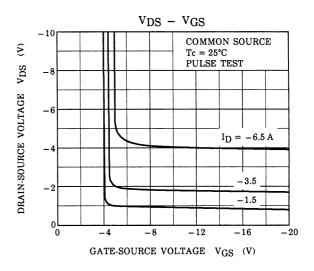


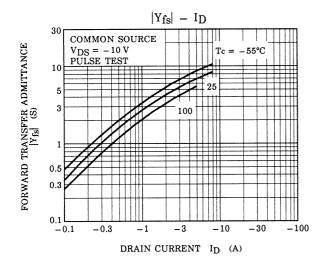
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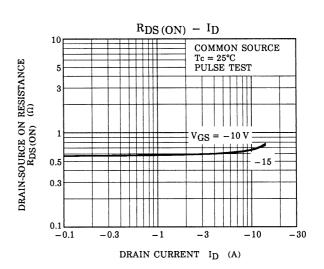




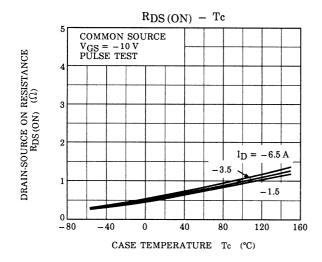


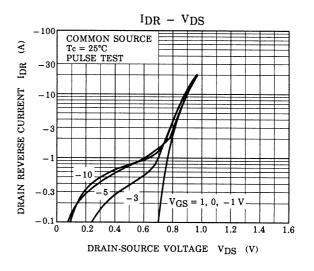


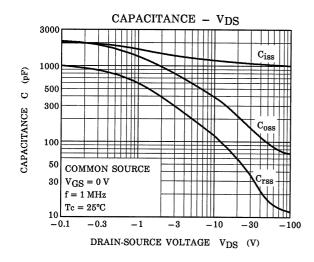


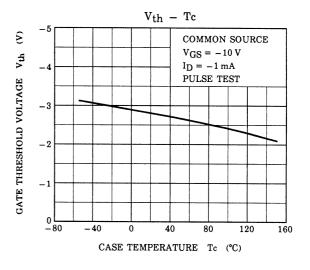


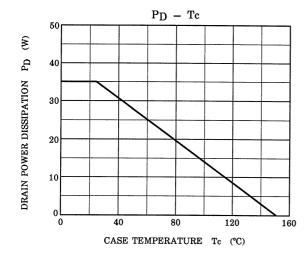
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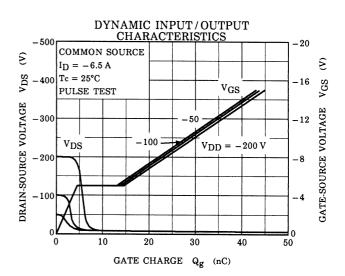


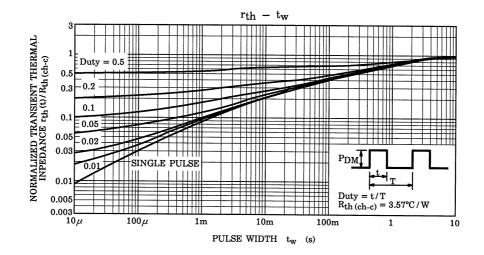


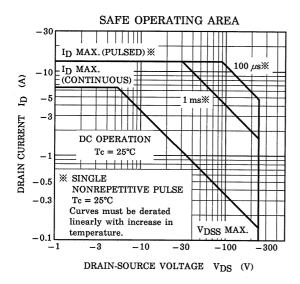


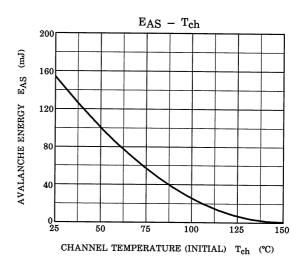


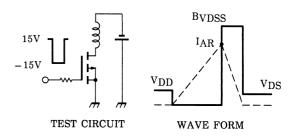












$$\begin{array}{ll} R_G\!=\!25\Omega \\ V_{DD}\!=\!-50V,\; L\!=\!6.3mH \end{array} \qquad E_{AS}\!=\!\frac{1}{2}\cdot L\cdot I^2\cdot (\frac{BV_{DSS}}{BV_{DSS}\!-\!V_{DD}})$$

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