

TPCS8006

High-Speed Switching Applications
 Switching Regulator Applications
 DC-DC Converter Applications

- Low drain-source ON resistance: $R_{DS(ON)} = 0.8 \Omega$ (typ.)
- High forward transfer admittance: $|Y_{fs}| = 1.6 S$ (typ.)
- Low leakage current: $I_{DSS} = 100 \mu A$ (max) ($V_{DS} = 250 V$)
- Enhancement model: $V_{th} = 1.5 \sim 3.5 V$ ($V_{DS} = 10 V, I_D = 1 mA$)

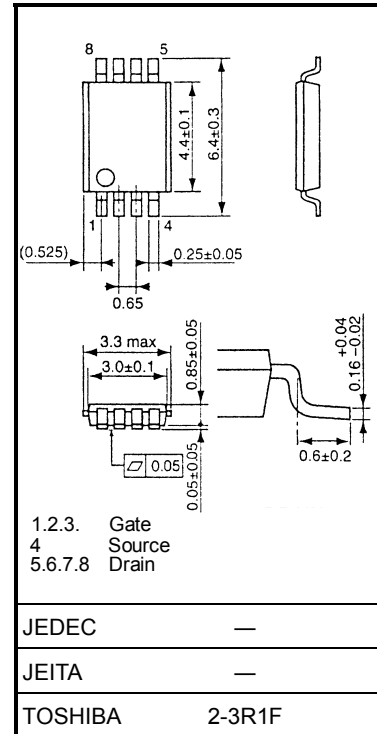
Maximum Ratings ($T_a = 25^\circ C$)

Characteristics	Symbol	Rating	Unit	
Drain-source voltage	V_{DSS}	250	V	
Drain-gate voltage ($R_{GS} = 20 k\Omega$)	V_{DGR}	250	V	
Gate-source voltage	V_{GSS}	± 20	V	
Drain current	DC (Note 1)	I_D	1.1	A
	Pulse (Note 1)	I_{DP}	4.4	
Drain power dissipation ($t = 10 s$) (Note 2a)	P_D	1.5	W	
Drain power dissipation ($t = 10 s$) (Note 2b)	P_D	0.6		
Single pulse avalanche energy(Note3)	E_{AS}	0.07	mJ	
Avalanche current	I_{AR}	1.1	A	
Repetitive avalanche energy (Note2a, Note 4)	E_{AR}	0.15	mJ	
Channel temperature	T_{ch}	150	$^\circ C$	
Storage temperature range	T_{stg}	$-55 \sim 150$	$^\circ C$	

Note 1, Note 2, Note 3 and Note 4: See the next page.

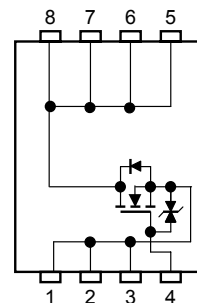
This transistor is an electrostatic-sensitive device. Please handle with caution.

Unit: mm



Weight: 0.035 g (typ.)

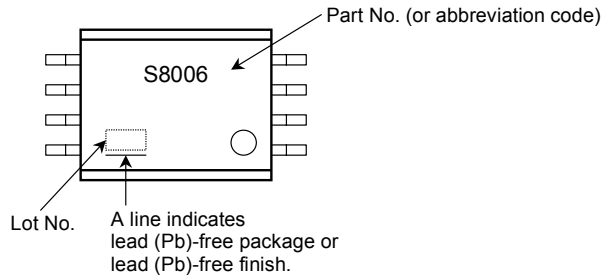
Circuit Configuration



Thermal Characteristics

Characteristics	Symbol	Max	Unit
Thermal resistance, channel to ambient (t = 10 s) (Note 2a)	$R_{th(ch-a)}$	83.3	°C/W
Thermal resistance, channel to ambient (t = 10 s) (Note 2b)	$R_{th(ch-a)}$	208	°C/W

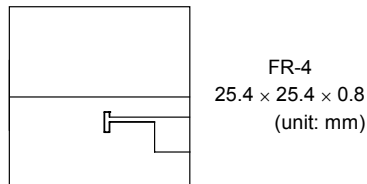
Marking (Note 5)



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

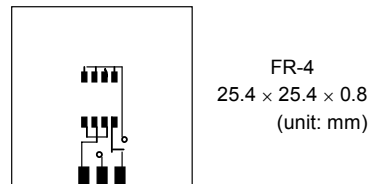
Note 2:

a) Device mounted on a glass-epoxy board (a)



(a)

b) Device mounted on a glass-epoxy board (b)



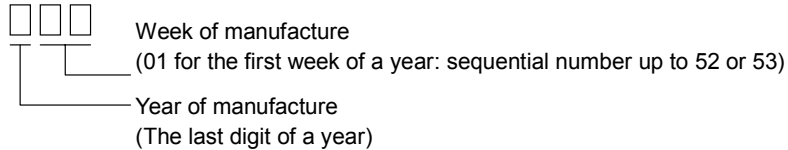
(b)

Note 3: $V_{DD} = 50\text{ V}$, $T_{ch} = 25^\circ\text{C}$ (initial), $L = 1.0\text{ mH}$, $R_G = 25\ \Omega$, $I_{AR} = 1.1\text{ A}$

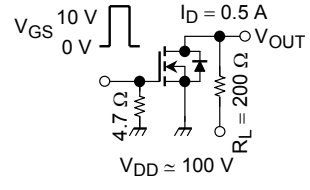
Note 4: Repetitive rating: pulse width limited by maximum channel temperature

Note 5: ○ on lower right of the marking indicates Pin 1.

※ Weekly code: (Three digits)



Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		I_{GSS}	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0 \text{ V}$	—	—	± 10	μA
Drain cut-OFF current		I_{DSS}	$V_{DS} = 250 \text{ V}, V_{GS} = 0 \text{ V}$	—	—	100	μA
Drain-source breakdown voltage		$V_{(BR)DSS}$	$I_D = 10 \text{ mA}, V_{GS} = 0 \text{ V}$	250	—	—	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		$R_{DS(ON)}$	$V_{GS} = 10 \text{ V}, I_D = 0.5 \text{ A}$	—	0.8	1.0	Ω
Forward transfer admittance		$ Y_{fs} $	$V_{DS} = 10 \text{ V}, I_D = 0.5 \text{ A}$	0.7	1.6	—	S
Input capacitance		C_{iss}	$V_{DS} = 10 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$	—	380	—	pF
Reverse transfer capacitance		C_{rfs}		—	32	—	pF
Output capacitance		C_{oss}		—	105	—	pF
Switching time	Rise time	t_r	 <p>$V_{GS} = 10 \text{ V}$ 0 V $I_D = 0.5 \text{ A}$ $V_{DD} \approx 100 \text{ V}$ $R_L = 200 \Omega$ V_{OUT} 4.7Ω</p>	—	11	—	ns
	Turn-ON time	t_{on}		—	20	—	
	Fall time	t_f		—	15	—	
	Turn-OFF time	t_{off}		—	45	—	
Total gate charge (gate-source plus gate-drain)		Q_g	$V_{DD} \approx 200 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 1.1 \text{ A}$	—	11	—	nC
Gate-source charge		Q_{gs}		—	7	—	nC
Gate-drain ("miller") charge		Q_{gd}		—	4	—	nC

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

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Drain reverse current (pulse)	(Note 1)	I_{DRP}	—	—	—	4.4	A
Forward voltage (diode)		V_{DSF}	$I_{DR} = 1.1 \text{ A}, V_{GS} = 0 \text{ V}$	—	—	-2.0	V
Reverse recovery time		t_{rr}	$I_{DR} = 1.1 \text{ A}, V_{GS} = 0 \text{ V},$	—	100	—	ns
Reverse recovery charge		Q_{rr}	$dI_{DR}/dt = 100 \text{ A}/\mu\text{s}$	—	320	—	nC

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