

Silicon N Channel MOS Type (π -MOSVI)**2SK3767**

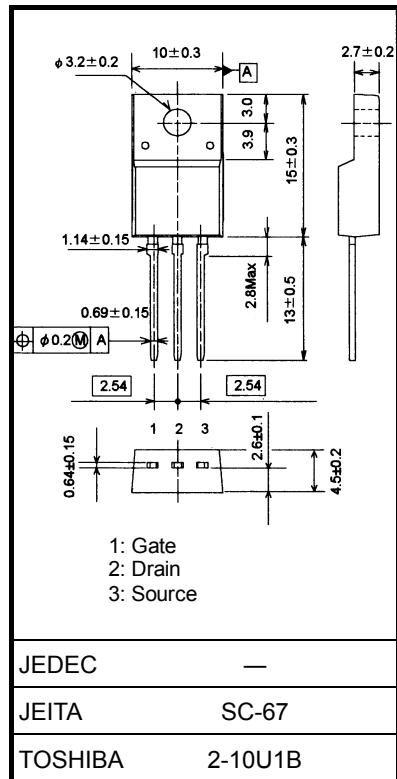
Switching Regulator Applications

Unit: mm

- Low drain-source ON resistance: $R_{DS\ (ON)} = 3.3\ \Omega$ (typ.)
- High forward transfer admittance: $|Y_{fs}| = 1.6\ S$ (typ.)
- Low leakage current: $I_{DSS} = 100\ \mu A$ ($V_{DS} = 600\ V$)
- Enhancement mode: $V_{th} = 2.0$ to $4.0\ V$ ($V_{DS} = 10\ V$, $I_D = 1\ mA$)

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

Characteristics		Symbol	Rating	Unit
Drain-source voltage		V_{DSS}	600	V
Drain-gate voltage ($R_{GS} = 20\ k\Omega$)		V_{DGR}	600	V
Gate-source voltage		V_{GSS}	± 30	V
Drain current	DC (Note 1)	I_D	2	A
	Pulse (Note 1)	I_{DP}	5	
Drain power dissipation ($T_c = 25^\circ C$)		P_D	25	W
Single pulse avalanche energy (Note 2)		E_{AS}	93	mJ
Avalanche current		I_{AR}	2	A
Repetitive avalanche energy (Note 3)		E_{AR}	4	mJ
Channel temperature		T_{ch}	150	$^\circ C$
Storage temperature range		T_{stg}	-55~150	$^\circ C$



Weight : 1.7 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).

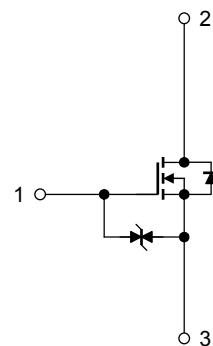
Thermal Characteristics

Characteristics	Symbol	Max	Unit
Thermal resistance, channel to case	$R_{th\ (ch-c)}$	5.0	$^\circ C/W$
Thermal resistance, channel to ambient	$R_{th\ (ch-a)}$	62.5	$^\circ C/W$

Note 1: Ensure that the channel temperature does not exceed $150^\circ C$.Note 2: $V_{DD} = 90\ V$, $T_{ch} = 25^\circ C$ (initial), $L = 41mH$, $R_G = 25\ \Omega$, $I_{AR} = 2\ A$

Note 3: Repetitive rating: pulse width limited by maximum channel temperature

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



Electrical Characteristics ($T_a = 25^\circ C$)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit	
Gate leakage current	I_{GSS}	$V_{GS} = \pm 25 V, V_{DS} = 0 V$	—	—	± 10	μA	
Gate-source breakdown voltage	$V_{(BR) GSS}$	$I_G = \pm 10 \mu A, V_{DS} = 0 V$	± 30	—	—	V	
Drain cut-off current	I_{DSS}	$V_{DS} = 600 V, V_{GS} = 0 V$	—	—	100	μA	
Drain-source breakdown voltage	$V_{(BR) DSS}$	$I_D = 10 mA, V_{GS} = 0 V$	600	—	—	V	
Gate threshold voltage	V_{th}	$V_{DS} = 10 V, I_D = 1 mA$	2.0	—	4.0	V	
Drain-source ON resistance	$R_{DS (\text{ON})}$	$V_{GS} = 10 V, I_D = 1 A$	—	3.3	4.5	Ω	
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 10 V, I_D = 1 A$	0.8	1.6	—	S	
Input capacitance	C_{iss}	$V_{DS} = 10 V, V_{GS} = 0 V, f = 1 MHz$	—	320	—	pF	
Reverse transfer capacitance	C_{rss}		—	30	—		
Output capacitance	C_{oss}		—	100	—		
Switching time	Rise time	t_r	 10 V V_{GS} 0 V $I_D = 1A$ Output $R_L = 200 \Omega$ $V_{DD} \approx 200 V$ Duty $\leq 1\%$, $t_W = 10 \mu s$	—	15	—	ns
	Turn-on time	t_{on}		—	55	—	
	Fall time	t_f		—	20	—	
	Turn-off time	t_{off}		—	80	—	
Total gate charge	Q_g	$V_{DD} \approx 400 V, V_{GS} = 10 V, I_D = 2 A$	—	9	—	nC	
Gate-source charge	Q_{gs}		—	5	—		
Gate-drain charge	Q_{gd}		—	4	—		

Source-Drain Ratings and Characteristics ($T_a = 25^\circ C$)

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}	—	—	—	5	A
Forward voltage (diode)	V_{DSF}	$I_{DR} = 2 A, V_{GS} = 0 V$	—	—	-1.7	V
Reverse recovery time	t_{rr}	$I_{DR} = 2 A, V_{GS} = 0 V,$ $dI_{DR}/dt = 100 A/\mu s$	—	1000	—	ns
Reverse recovery charge	Q_{rr}		—	3.5	—	μC

Marking