

TOSHIBA Field Effect Transistor Silicon N Channel MOS Type ( $\pi$ -MOSV)

# 2SK3067

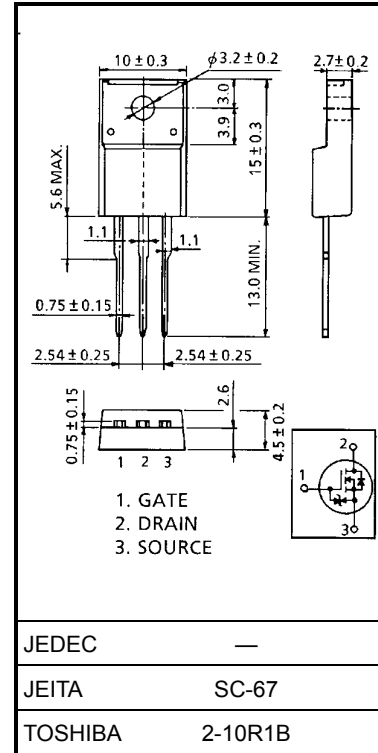
Chopper Regulator, DC-DC Converter and Motor Drive Applications

Unit: mm

- Low drain-source ON resistance :  $R_{DS(ON)} = 4.2 \Omega$  (typ.)
- High forward transfer admittance :  $|Y_{fs}| = 1.7 S$  (typ.)
- Low leakage current :  $I_{DSS} = 100 \mu A$  (max) ( $V_{DS} = 600 V$ )
- Enhancement-mode :  $V_{th} = 2.0 \sim 4.0 V$  ( $V_{DS} = 10 V, I_D = 1 mA$ )

### Maximum Ratings ( $T_c = 25^\circ C$ )

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	$V_{GSS}$	$\pm 30$	V	
Drain current	DC (Note 1)	$I_D$	2	A
	Pulse ( $t = 1 ms$ ) (Note 1)	$I_{DP}$	5	A
	Pulse ( $t = 100 \mu s$ ) (Note 1)	$I_{DP}$	8	A
Drain power dissipation	$P_D$	25	W	
Single pulse avalanche energy (Note 2)	$E_{AS}$	93	mJ	
Avalanche current	$I_{AR}$	2	A	
Repetitive avalanche energy (Note 3)	$E_{AR}$	2.5	mJ	
Channel temperature	$T_{ch}$	150	$^\circ C$	
Storage temperature range	$T_{stg}$	$-55 \sim 150$	$^\circ C$	



Weight: 1.9 g (typ.)

### Electrical Characteristics ( $T_c = 25^\circ C$ )

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

Note 1: Please use devices on condition that the channel temperature is below  $150^\circ C$ .

Note 2:  $V_{DD} = 90 V, T_{ch} = 25^\circ C$  (initial),  $L = 41 mH, R_G = 25 \Omega, I_{AR} = 2 A$

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

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

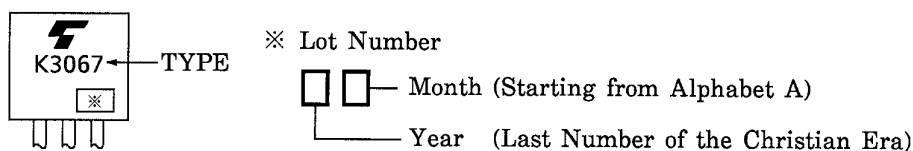
## Electrical Characteristics (Tc = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		$I_{GSS}$	$V_{GS} = \pm 25\text{ V}, V_{DS} = 0\text{ V}$	—	—	$\pm 10$	$\mu\text{A}$
Gate-source breakdown voltage		$V_{(BR)GSS}$	$I_G = \pm 10\ \mu\text{A}, V_{DS} = 0\text{ V}$	$\pm 30$	—	—	V
Drain cut-off current		$I_{DSS}$	$V_{DS} = 600\text{ V}, V_{GS} = 0\text{ V}$	—	—	100	$\mu\text{A}$
Drain-source breakdown voltage		$V_{(BR)DSS}$	$I_D = 10\text{ mA}, V_{GS} = 0\text{ V}$	600	—	—	V
Gate threshold voltage		$V_{th}$	$V_{DS} = 10\text{ V}, I_D = 1\text{ mA}$	2.0	—	4.0	V
Drain-source ON resistance		$R_{DS(ON)}$	$V_{GS} = 10\text{ V}, I_D = 1\text{ A}$	—	4.2	5.0	$\Omega$
Forward transfer admittance		$ Y_{fs} $	$V_{DS} = 10\text{ V}, I_D = 1\text{ A}$	0.8	1.7	—	S
Input capacitance		$C_{iss}$	$V_{DS} = 10\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$	—	380	—	pF
Reverse transfer capacitance		$C_{rss}$		—	40	—	
Output capacitance		$C_{oss}$		—	120	—	
Switching time	Rise time	$t_r$	<p><math>I_D = 1\text{ A}</math> <math>V_{GS} = 10\text{ V}</math> <math>V_{DS} = V_{OUT}</math> <math>R_L = 200\ \Omega</math> <math>V_{DD} = 200\text{ V}</math></p>	—	15	—	ns
	Turn-on time	$t_{on}$		—	25	—	
	Fall time	$t_f$		—	20	—	
	Turn-off time	$t_{off}$		—	80	—	
Total gate charge (Gate-source plus gate-drain)		$Q_g$	$V_{DD} \approx 480\text{ V}, V_{GS} = 10\text{ V}, I_D = 2\text{ A}$	—	9	—	nC
Gate-source charge		$Q_{gs}$		—	5	—	
Gate-drain ("miller") charge		$Q_{gd}$		—	4	—	

## Source-Drain Ratings and Characteristics (Tc = 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)	$I_{DRP}$	$t = 1\text{ ms}$	—	—	5	A
	$I_{DRP}$	$t = 100\ \mu\text{s}$	—	—	8	A
Forward voltage (diode)	$V_{DSF}$	$I_{DR} = 2\text{ A}, V_{GS} = 0\text{ V}$	—	—	-1.5	V
Reverse recovery time	$t_{rr}$	$I_{DR} = 2\text{ A}, V_{GS} = 0\text{ V}$	—	1000	—	ns
Reverse recovery charge	$Q_{rr}$	$dI_{DR} / dt = 100\text{ A} / \mu\text{s}$	—	5.0	—	$\mu\text{C}$

## Marking



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