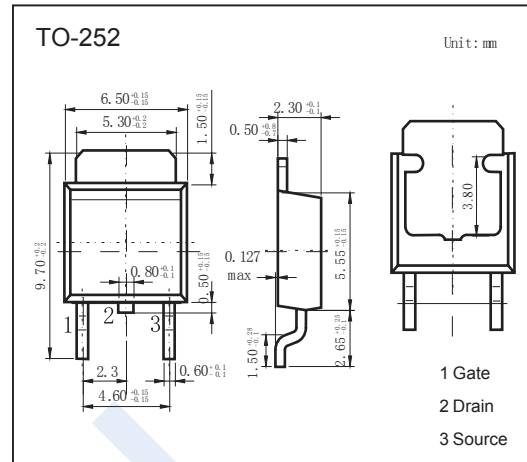
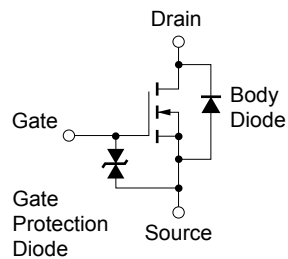


## N-Channel MOSFET

### 2SK3224-Z

#### ■ Features

- $V_{DS} (V) = 60V$
- $I_D = 20 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 40m\Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 60m\Omega (V_{GS} = 4V)$
- Low Ciss : Ciss = 790 pF TYP.



#### ■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	60	V	
Gate-Source Voltage	$V_{GS}$	(AC) $\pm 20$		
		(DC) $+20, -10$		
Continuous Drain Current	$I_D$	20	A	
Pulsed Drain Current (Note.1)	$I_{DM}$	70		
Single Avalanche Current (Note.2)	$I_{AS}$	10		
Power Dissipation	$P_D$	$T_c = 25^\circ C$	25	W
		$T_a = 25^\circ C$	1	
Single Avalanche Energy (Note.2)	$E_{AS}$	10	mJ	
Thermal Resistance.Junction- to-Ambient	$R_{thJA}$	125	$^\circ C/W$	
Thermal Resistance.Junction- to-Case	$R_{thJC}$	5		
Junction Temperature	$T_J$	150	$^\circ C$	
Storage Temperature Range	$T_{stg}$	-55 to 150		

Note.1:  $PW \leq 10 \mu s$ , Duty cycle  $\leq 1\%$

Note.2: Starting  $T_J = 25^\circ C$ ,  $R_G = 25 \Omega$ ,  $V_{GS} = 20 V - 0 V$

## N-Channel MOSFET

### 2SK3224-Z

#### ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{DS}$	$I_D=250\ \mu\text{A}$ , $V_{GS}=0\text{V}$	60			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=60\text{V}$ , $V_{GS}=0\text{V}$			10	$\mu\text{A}$
Gate-Body Leakage Current	$I_{GSS}$	$V_{DS}=0\text{V}$ , $V_{GS}=\pm 20\text{V}$			$\pm 10$	$\mu\text{A}$
Gate to Source Cut-off Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}$ , $I_D=1\text{mA}$	1		2	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}$ , $I_D=10\text{A}$			40	$\text{m}\Omega$
		$V_{GS}=4\text{V}$ , $I_D=10\text{A}$			60	
Forward Transconductance	$g_{FS}$	$V_{GS}=10\text{V}$ , $I_D=10\text{A}$	8	15		S
Input Capacitance	$C_{iss}$	$V_{GS}=0\text{V}$ , $V_{DS}=10\text{V}$ , $f=1\text{MHz}$		790		pF
Output Capacitance	$C_{oss}$			240		
Reverse Transfer Capacitance	$C_{rss}$			100		
Total Gate Charge	$Q_g$	$V_{GS(on)}=10\text{V}$ , $V_{DS}=48\text{V}$ , $I_D=20\text{A}$		20		nC
Gate Source Charge	$Q_{gs}$			3		
Gate Drain Charge	$Q_{gd}$			6.5		
Turn-On DelayTime	$t_{d(on)}$	$V_{GS(on)}=10\text{V}$ , $V_{DS}=30\text{V}$ , $I_D=10\text{A}$ , $R_G=10\ \Omega$		19		ns
Turn-On Rise Time	$t_r$			165		
Turn-Off DelayTime	$t_{d(off)}$			62		
Turn-Off Fall Time	$t_f$			71		
Body Diode Reverse Recovery Time	$t_{rr}$	$I_F=20\text{A}$ , $V_{GS}=0\text{V}$ , $di/dt=100\text{A}/\mu\text{s}$		40		nC
Body Diode Reverse Recovery Charge	$Q_{rr}$			45		
Diode Forward Voltage	$V_{SD}$	$I_F=20\text{A}$ , $V_{GS}=0\text{V}$		0.93		V