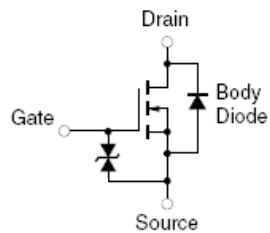
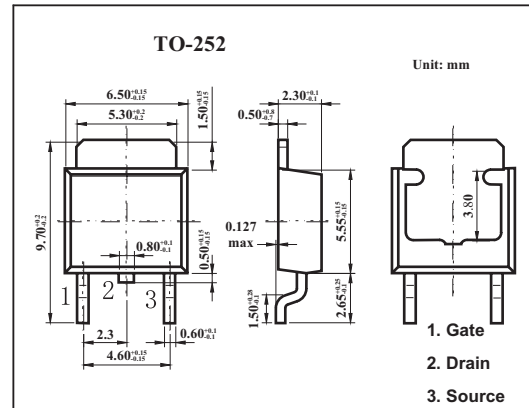


## MOS Field Effect Transistor

## 2SK3640

## ■ Features

- Low on-state resistance  
 $R_{DS(on)1} = 21 \text{ m}\Omega \text{ MAX. (} V_{GS} = 10 \text{ V, } I_D = 9 \text{ A)}$   
 $R_{DS(on)2} = 40 \text{ m}\Omega \text{ MAX. (} V_{GS} = 4.5 \text{ V, } I_D = 9 \text{ A)}$
- Low Ciss: Ciss = 570 pF TYP.
- Built-in gate protection diode

■ Absolute Maximum Ratings  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Rating	Unit
Drain to Source Voltage	$V_{DS}$	30	V
Gate to Source Voltage	$V_{GS}$	$\pm 16$	V
Drain Current(DC)	$I_{D(DC)}$	$\pm 19$	A
Drain Current(pulse) *1	$I_{D(pulse)}$	$\pm 76$	A
Total Power Dissipation ( $T_c = 25^\circ\text{C}$ )	$P_T$	20	W
Total Power Dissipation	$P_T$	1	W
Channel Temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$
Single Avalanche Current *2	$I_{AS}$	10	A
Single Avalanche Energy *2	$E_{AS}$	10	mJ

\*1  $PW \leq 10 \mu\text{s}$ , Duty Cycle  $\leq 1\%$

\*2. Starting  $T_{ch} = 25^\circ\text{C}$ ,  $V_{DD} = 15 \text{ V}$ ,  $R_G = 25 \Omega$ ,  $V_{GS} = 20 \rightarrow 0 \text{ V}$ ,  $L = 100 \mu\text{H}$

## 2SK3640

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Drain Cut-off Current	$I_{DSS}$	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$			10	$\mu\text{ A}$
Gate Leakage Current	$I_{GSS}$	$V_{GS} = \pm 16\text{ V}, V_{DS} = 0\text{ V}$			$\pm 10$	$\mu\text{ A}$
Gate Cut-off Voltage	$V_{GS(off)}$	$V_{DS} = 10\text{ V}, I_D = 1\text{ mA}$	1.5		2.5	V
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS} = 10\text{ V}, I_D = 9\text{ A}$	3.7	7.4		S
Drain to Source On-state Resistance	$R_{DS(on)1}$	$V_{GS} = 10\text{ V}, I_D = 9\text{ A}$		15	21	$\text{m}\Omega$
	$R_{DS(on)2}$	$V_{GS} = 4.5\text{ V}, I_D = 9\text{ A}$		24	40	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS} = 10\text{ V}$		570		pF
Output Capacitance	$C_{oss}$	$V_{GS} = 0\text{ V}$		160		pF
Feedback Capacitance	$C_{rss}$	$f = 1\text{ MHz}$		100		pF
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 15\text{ V}, I_D = 9\text{ A}$		7.7		ns
Rise Time	$t_r$	$V_{GS} = 10\text{ V}$		4.7		ns
Turn-off Delay Time	$t_{d(off)}$	$R_G = 10\Omega$		24		ns
Fall Time	$t_f$			7		ns
Total Gate Charge	$Q_g$	$V_{DD} = 24\text{ V}$		14		nC
Gate-Source Charge	$Q_{gs}$	$V_{GS} = 10\text{ V}$		2.4		nC
Gate-Drain Charge	$Q_{gd}$	$I_D = 19\text{ A}$		4.3		nC
Diode Forward Voltage	$V_{F(S-D)}$	$I_F = 19\text{ A}, V_{GS} = 0\text{ V}$		0.95		V
Reverse Recovery Time	$t_{rr}$	$I_F = 19\text{ A}, V_{GS} = 0\text{ V}$		21		ns
Reverse Recovery Charge	$Q_{rr}$	$di/dt = 100\text{ A}/\mu\text{ s}$		12		nC