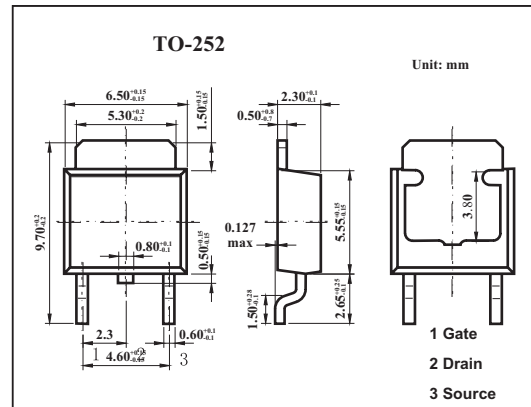


## MOS Field Effect Transistor

### 2SK3643

#### ■ Features

- Low on-state resistance  
 $R_{DS(on)1} = 6 \text{ m}\Omega \text{ MAX. (} V_{GS} = 10 \text{ V, } I_D = 32 \text{ A)}$   
 $R_{DS(on)2} = 9 \text{ m}\Omega \text{ MAX. (} V_{GS} = 4.5 \text{ V, } I_D = 32 \text{ A)}$
- Low  $C_{iss}$ :  $C_{iss} = 2400 \text{ pF TYP.}$



#### ■ 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	$V_{GS}$	$\pm 20$	V
Drain current	$I_D$	$\pm 64$	A
	$I_{dp}^*$	$\pm 256$	A
Power dissipation	$P_D$	$T_c = 25^\circ\text{C}$	40
		$T_a = 25^\circ\text{C}$	1.0
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

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

#### ■ Electrical Characteristics $T_a = 25^\circ\text{C}$

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Drain cut-off current	$I_{DSS}$	$V_{DS} = 30 \text{ V, } V_{GS} = 0$			10	$\mu\text{A}$
Gate leakage current	$I_{GSS}$	$V_{GS} = \pm 20 \text{ V, } V_{DS} = 0$			$\pm 100$	nA
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} $	$V_{DS} = 10 \text{ V, } I_D = 32 \text{ A}$	19	39		S
Drain to source on-state resistance	$R_{DS(on)1}$	$V_{GS} = 10 \text{ V, } I_D = 32 \text{ A}$		4.7	6	$\text{m}\Omega$
	$R_{DS(on)2}$	$V_{GS} = 4.5 \text{ V, } I_D = 32 \text{ A}$		6.3	9	$\text{m}\Omega$
Input capacitance	$C_{iss}$	$V_{DS} = 10 \text{ V, } V_{GS} = 0, f = 1 \text{ MHz}$		2400		pF
Output capacitance	$C_{oss}$			920		pF
Reverse transfer capacitance	$C_{rss}$			320		pF
Turn-on delay time	$t_{on}$	$I_D = 32 \text{ A, } V_{GS(on)} = 10 \text{ V, } R_G = 10 \Omega, V_{DD} = 15 \text{ V}$		14		ns
Rise time	$t_r$			14		ns
Turn-off delay time	$t_{off}$			75		ns
Fall time	$t_f$			23		ns
Total Gate Charge	$Q_G$	$V_{DD} = 24 \text{ V}$		48		nC
Gate to Source Charge	$Q_{GS}$	$V_{GS} = 10 \text{ V}$		8.4		nC
Gate to Drain Charge	$Q_{GD}$	$I_D = 64 \text{ A}$		12		nC