

TOSHIBA

Discrete Semiconductors

2SK2038

Field Effect Transistor

Unit in mm

Silicon N Channel MOS Type (n-MOS II.5)

High Speed, High Current Switching Applications

Features

- Low Drain-Source ON Resistance
 - $R_{DS(ON)} = 1.8\Omega$ (Typ.)
- High Forward Transfer Admittance
 - $|Y_{fs}| = 3.0S$ (Typ.)
- Low Leakage Current
 - $I_{DSS} = -300\mu A$ (Max.) @ $V_{DS} = 640V$
- Enhancement-Mode
 - $V_{th} = 1.5 \sim 3.5V$ @ $V_{DS} = -10V$, $I_D = 1mA$

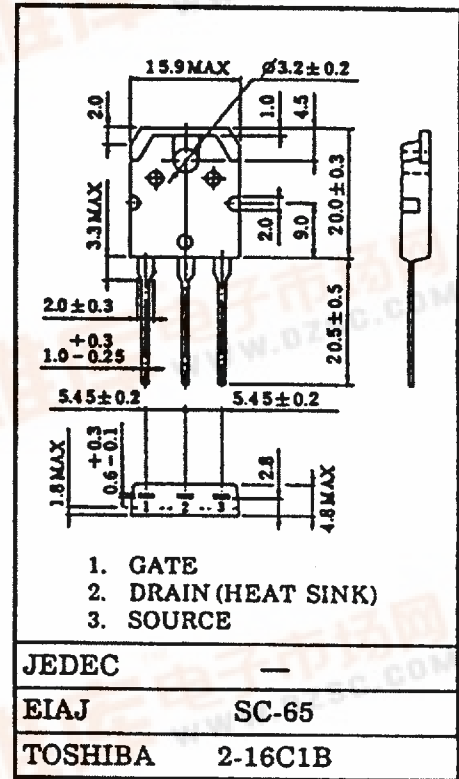
Absolute Maximum Ratings (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DSS}	800	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)	V_{DGR}	800	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current	DC	5	A
	Pulse	15	
Drain Power Dissipation (Tc = 25°C)	P_D	125	W
Channel Temperature	T_{ch}	150	°C
Storage Temperature Range	T_{lg}	-55 ~ 150	°C

Thermal Characteristics

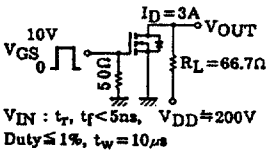
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{(ch-c)}$	1.0	°C/W
Thermal Resistance, Channel to Ambient	$R_{(ch-a)}$	50	°C/W

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



Weight : 4.6g

Electrical Characteristics (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 30V, V_{DS} = 0V$	—	—	± 100	nA
Drain Cut-off Current	I_{DSS}	$V_{DS} = 640V, V_{GS} = 0V$	—	—	300	μA
Drain-Source Breakdown Voltage	$V_{(BR) DSS}$	$I_D = 10mA, V_{GS} = 0V$	800	—	—	V
Gate Threshold Voltage	V_{th}	$V_{DS} = 10V, I_D = -1mA$	1.5	—	3.5	V
Drain-Source ON Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 3A$	—	1.8	2.2	Ω
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS} = 20V, I_D = 3A$	1.0	3.0	—	S
Input Capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1MHz$	—	610	870	pF
Reverse Transfer Capacitance	C_{rss}		—	60	100	
Output Capacitance	C_{oss}		—	110	165	
Switching Time	Rise Time		—	30	60	ns
	Turn-on Time		—	70	140	
	Fall Time		—	35	70	
	Turn-off Time		—	165	330	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q_g	$V_{DD} = 400V, V_{GS} = 10V,$ $I_D = -5A$	—	47	94	nC
Gate-Source Charge	Q_{gs}		—	19	—	
Gate-Drain ("Miller") Charge	Q_{gd}		—	28	—	

Source-Drain Diode Ratings and Characteristics (Ta = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I_{DR}	—	—	—	5	A
Pulse Drain Reverse Current	I_{DRP}	—	—	—	15	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 5A, V_{GS} = 0V$	—	—	1.9	V
Reverse Recovery Time	t_r	$I_{DR} = 5A, V_{GS} = 0V$	—	1450	—	ns
Reverse Recovered Charge	Q_r	$dI_{DR}/dt = 100A/\mu s$	—	20	—	μC

