

FIELD EFFECT TRANSISTOR
SILICON N CHANNEL MOS TYPE (L²-π-MOSIII)

2SK943

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.
DC-DC CONVERTER, RELAY DRIVE AND MOTOR DRIVE APPLICATIONS.

INDUSTRIAL APPLICATIONS

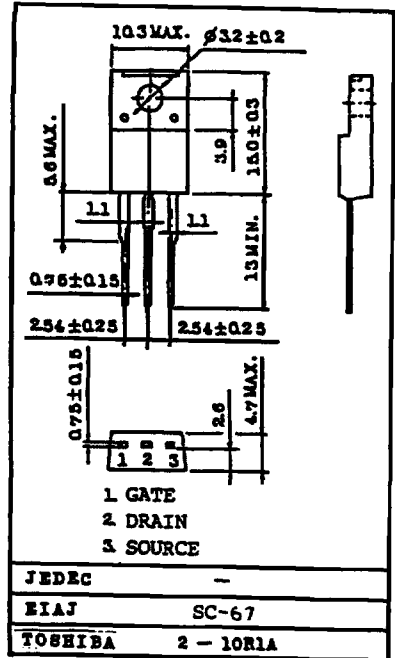
Unit in mm

FEATURES:

- 4-Volt Gate Drive
- Low Drain-Source ON Resistance : $R_{DS(ON)}=0.036\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 14S$ (Typ.)
- Low Leakage Current :
 $I_{DSS}= 100\mu A$ (Max.) @ $V_{DS}= 60V$
- Enhancement-Mode : $V_{th}= 0.8\sim 2.0V$ @ $V_{DS}= 10V, I_D = 1mA$

MAXIMUM RATINGS (Ta =25 °C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	60	V
Drain-Gate Voltage (RGS=20kΩ)		V_{DGR}	60	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	DC	I_D	25	A
	Pulse	I_{DP}	100	A
Drain Power Dissipation (Tc=25°C)		P_D	40	W
Channel Temperature		T_{ch}	150	°C
Storage Temperature Range		T_{stg}	-55~150	°C



Weight: 2.0g

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	3.125	°C/W
Thermal Resistance, Channel To Ambient	$R_{th(ch-a)}$	62.5	°C/W

ELECTRICAL CHARACTERISTICS (Ta=25 °C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I _{GSS}	V _{GS} = ±20V, V _{DS} =0V	—	—	±100	nA
Drain Cut-off Current		I _{DSS}	V _{DS} = 60V, V _{GS} =0V	—	—	100	μA
Drain-Source Breakdown Voltage		V(BR)DSS	I _D =10mA, V _{GS} =0V	60	—	—	V
Gate Threshold Voltage		V _{th}	V _{DS} =10V, I _D =1mA	0.8	—	2.0	V
ON State Drain Current		I _{D(ON)}	V _{DS} = 4V, V _{GS} = 4V	12	—	—	A
Drain-Source ON Resistance		R _{DS(ON)}	V _{GS} = 4V, I _D = 6A	—	0.057	0.080	Ω
			V _{GS} =10V, I _D =12A	—	0.036	0.046	
Forward Transfer Admittance		Y _{fs}	V _{DS} =10V, I _D =12A	9.0	14	—	S
Input Capacitance		C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1MHz	—	1250	1800	pF
Reverse Transfer Capacitance		C _{rss}		—	340	500	
Output Capacitance		C _{oss}		—	940	1300	
Switching Time	Rise Time	t _r	<p>V_{GS} 10V 0V I_D=12A V_{OUT} 7.5 Ω R_L= 2.5Ω V_{IN}: tr, tf < 5ns, Duty ≤ 1%, tw=10μs V_{DD}≅30V</p>	—	15	30	ns
	Turn-on Time	t _{on}		—	25	50	
	Fall Time	t _f		—	60	120	
	Turn-off Time	t _{off}		—	145	290	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q _g	V _{DD} ≅60V, V _{GS} =10V, I _D =25A	—	58	110	nC
Gate-Source Charge		Q _{gs}		—	34	—	
Gate-Drain(" Miller")Charge		Q _{gd}		—	24	—	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS(Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I _{DR}	---	—	—	25	A
Pulse Drain Reverse Current	I _{DRP}	---	—	—	100	A
Diode Forward Voltage	V _{DSF}	I _{DR} =25A, V _{GS} =0V	—	-1.2	-1.9	V
Reverse Recovery Time	t _{rr}	I _{DR} =25A, V _{GS} =0V	—	160	—	ns
Reverse Recovered Charge	Q _{rr}	d I _{DR} /dt = 50A/μs	—	0.64	—	μC