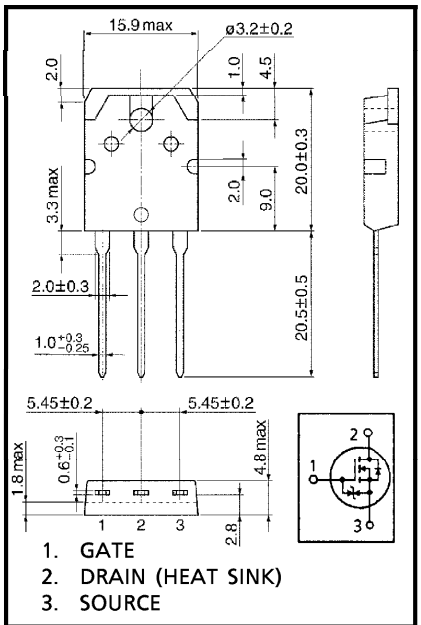
TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (π-MOSⅤ)

2SK2744

CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR DRIVE APPLICATIONS

- 4 V Gate Drive
- Low Drain-Source ON Resistance : $R_{DS\,(ON)}$ = 15 mΩ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}|$ = 27 S (Typ.)
- Low Leakage Current : I_{DSS} = 100 μA (Max.) (V_{DS} = 50 V)
- Enhancement-Mode : V_{th} = 1.5~3.5 V (V_{DS} = 10 V, I_D = 1 mA)

Unit in mm



JEDEC	—
JEITA	SC-65
TOSHIBA	2-16C1B

Weight : 4.6 g (Typ.)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	50	V
Drain-Gate Voltage (R_{GS} = 20 kΩ)		V_{DGR}	50	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	DC (Note 1)	I_D	45	A
	Pulse (Note 1)	I_{DP}	180	A
Drain Power Dissipation (Tc = 25°C)		P_D	125	W
Single Pulse Avalanche Energy (Note 2)		E_{AS}	95	mJ
Avalanche Current		I_{AR}	45	A
Repetitive Avalanche Energy (Note 3)		E_{AR}	12.5	mJ
Channel Temperature		T_{ch}	150	°C
Storage Temperature Range		T_{stg}	−55~150	°C

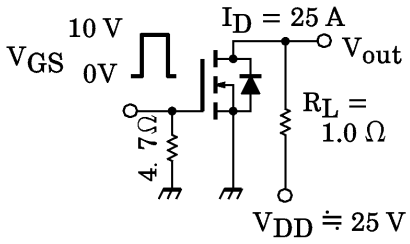
THERMAL CHARACTERISTICS

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

(Note 1) : Please use devices on condition that the channel temperature is below 150°C.
(Note 2) : V_{DD} = 25 V, T_{ch} = 25°C (initial), L = 58 μH, R_G = 25 Ω, I_{AR} = 45 A
(Note 3) : Repetitive rating ; Pulse Width Limited by maximum junction temperature.

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

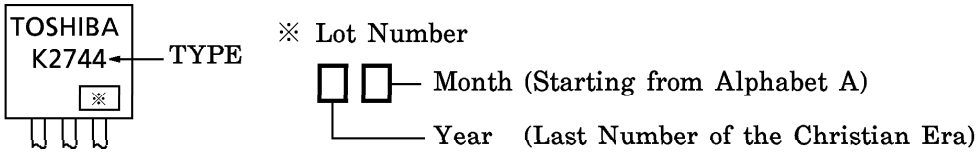
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	V_{GS} = ±16 V, V_{DS} = 0 V	—	—	±10	μA
Drain Cut-off Current		I_{DSS}	V_{DS} = 50 V, V_{GS} = 0 V	—	—	100	μA
Drain-Source Breakdown Voltage		$V_{(BR)\ DSS}$	I_D = 10 mA, V_{GS} = 0 V	50	—	—	V
Gate Threshold Voltage		V_{th}	V_{DS} = 10 V, I_D = 1 mA	1.5	—	3.5	V
Drain-Source ON Resistance		$R_{DS\ (ON)}$	V_{GS} = 10 V, I_D = 25 A	—	15	20	mΩ
Forward Transfer Admittance		$\|Y_{fs}\|$	V_{DS} = 10 V, I_D = 25 A	15	27	—	S
Input Capacitance		C_{iss}	V_{DS} = 10 V, V_{GS} = 0 V, f = 1 MHz	—	2300	—	pF
Reverse Transfer Capacitance		C_{rss}		—	420	—	
Output Capacitance		C_{oss}		—	1200	—	
Switching Time	Rise Time	t_r		—	30	—	ns
	Turn-on Time	t_{on}		—	45	—	
	Fall Time	t_f		—	80	—	
	Turn-off Time	t_{off}	Duty ≦ 1%, t_w = 10 μs	—	230	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	V_{DD} ≒ 40 V, V_{GS} = 10 V, I_D = 45 A	—	68	—	nC
Gate-Source Charge		Q_{gs}		—	20	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	48	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current (Note 1)	I_{DR}	—	—	—	45	A
Pulse Drain Reverse Current (Note 1)	I_{DRP}	—	—	—	180	A
Forward Voltage (Diode)	V_{DSF}	I_{DR} = 45 A, V_{GS} = 05V	—	—	−1.8	V
Reverse Recovery Time	t_{rr}	I_{DR} = 455A, V_{GS} = 05V	—	130	—	ns
Reverse Recovery Charge	Q_{rr}	dI_{DR} / dt = 50A / μs	—	0.3	—	nC

MARKING



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