

T-39-13

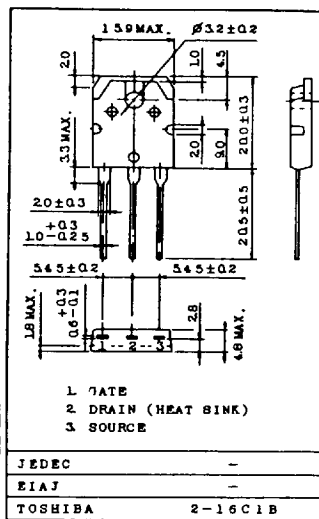
HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS.
CHOPPER REGULATOR, DC-DC CONVERTER AND MOTOR
DRIVE APPLICATIONS.

FEATURES:

- Low Drain-Source ON Resistance : $R_{DS(ON)}=0.3\Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}|=11S$ (Typ.)
- Low Leakage Current : $I_{GSS}=\pm 500nA$ (Max.) @ $V_{GS}=\pm 20V$
 $I_{DSS}=250\mu A$ (Max.) @ $V_{DS}=500V$
- Enhancement-Mode : $V_{th}=2.0\sim 4.0V$ @ $V_{DS}=V_{GS}, I_D=250\mu A$

INDUSTRIAL APPLICATIONS

Unit in mm

MAXIMUM RATINGS ($T_a=25^\circ C$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DSX}	500	V
Drain-Gate Voltage ($R_{GS}=20k\Omega$)	V_{DGR}	500	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current	DC	I_D	13
	Pulse	I_{DP}	52
Drain Power Dissipation ($T_c=25^\circ C$)	P_D	150	W
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature Range	T_{stg}	$-55\sim 150$	$^\circ C$

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.83	$^\circ C/W$
Thermal Resistance, Junction to Ambient	$R_{th(j-a)}$	50	$^\circ C/W$
Maximum Lead Temperature for Soldering Purposes (1.6mm from case for 10 seconds)	T_L	300	$^\circ C$

ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current	IGSS	V _{GS} =±20V, V _{DS} =0V	-	-	±500	nA	
Drain Cut-off Current	IDSS	V _{DS} =500V, V _{GS} =0V	-	-	250	μA	
Drain-Source Breakdown Voltage	V(BR)DSS	I _D =250μA, V _{GS} =0V	500	-	-	V	
Gate Threshold Voltage	V _{th}	V _{DS} =V _{GS} , I _D =250μA	2.0	-	4.0	V	
Forward Transfer Admittance	Y _{fs}	V _{DS} =10V, I _D =7A	6.0	11	-	S	
Drain-Source ON Resistance	R _{DS(ON)}	I _D =7A, V _{GS} =10V	-	0.3	0.4	Ω	
Drain-Source ON Voltage	V _{DS(ON)}	I _D =13A, V _{GS} =10V	-	4.3	6.3	V	
Input Capacitance	C _{iss}		-	2000	3000		
Reverse Transfer Capacitance	C _{rss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	-	100	200	pF	
Output Capacitance	C _{oss}		-	370	600		
Switching Time	Rise Time	t _r		-	25	50	ns
	Turn-on Time	t _{on}		-	40	85	
	Fall Time	t _f		-	35	70	
	Turn-off Time	t _{off}		-	110	220	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q _g	I _D =16A, V _{GS} =10V V _{DD} =400V	-	82	120	nC	
Gate-Source Charge	Q _{gs}		-	40	-		
Gate-Drain ("Miller") Charge	Q _{gd}		-	42	-		

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	IDR	--	-	-	13	A
Pulse Drain Reverse Current	IDRP	--	-	-	52	A
Diode Forward Voltage	V _{DSF}	I _{DR} =13A, V _{GS} =0V	-	-	1.4	V
Reverse Recovery Time	t _{rr}	I _{DR} =13A	-	1300	-	ns
Reverse Recovered Charge	Q _{rr}	dI _{DR} /dt=100A/μs	-	7.4	-	μC