Toshiba

SEMICONDUCTOR
TECHNICAL DATA

2SK447
MG15D4GM1
MG15D4HM1
MG15D6EM1

(250V/15A)

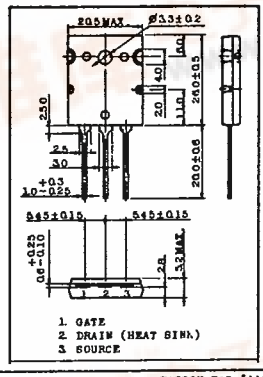
T-39-27

OUT LINE

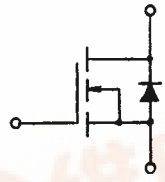
Unit in mm

EQUIVALENT CIRCUIT

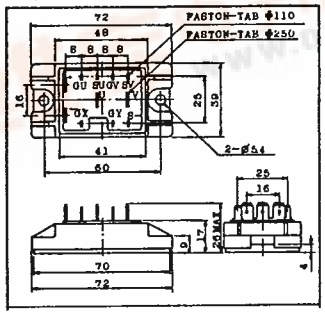
2SK447



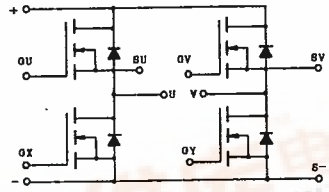
Weight : 9.75gr



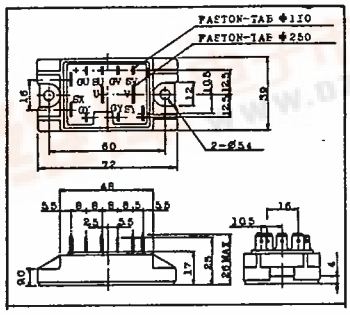
MG15D4GM1



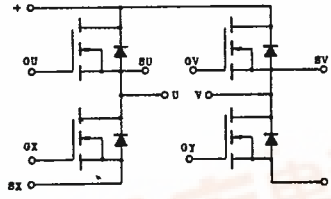
Weight : 140gr



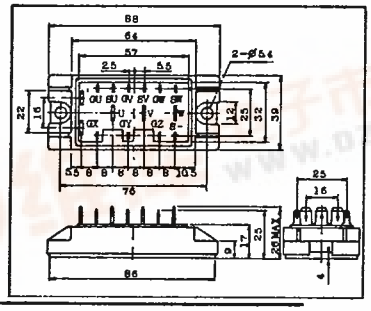
MG15D4HM1



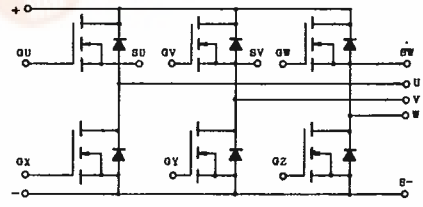
Weight : 140gr



MG15D6EM1



Weight : 180gr



TOSHIBA CORPORATION

GT1A2A

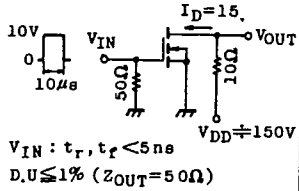
2SK447
MG15D4GM1
MG15D4HM1
MG15D6EM1

T-39-27

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC		SYMBOL	RATING 2SK447	RATING MODULE	UNIT
Drain-Source Voltage		V_{DSS}	250	250	V
Gate-Source Voltage		V_{GSS}	±20	±20	V
Drain Current	DC	I_D	±15	±15	A
	Peak		±30	±30	A
Drain Power Dissipation (Tc=25°C)		P_D	150	100	W
Channel Temperature		Tch	150	150	°C
Storage Temperature Range		Tstg	-55~150	-40~125	°C
Isolation Voltage		V_{Isol}	—	2500 (AC 1 Min.)	V
Screw Torque		-	—	30	Kg.cm

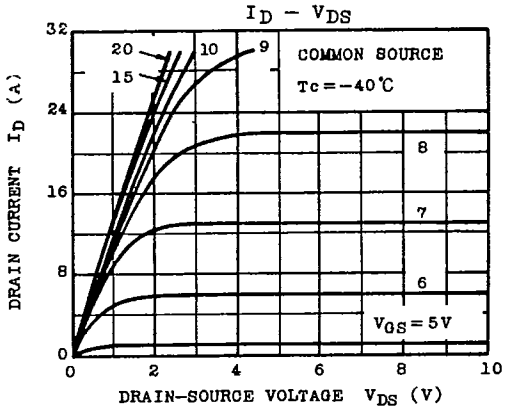
ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	V_{GS}=±20V, V_{DS}=0	-	-	±100	nA
Drain Cut-off Current		I_{DSS}	V_{DS}=250V, V_{GS}=0	-	-	1.0	mA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	I_D=10mA, V_{GS}=0	250	-	-	V
Gate Threshold Voltage		Vth	V_{DS}=10V, I_D=1mA	1.5	-	3.5	V
Forward Transfer Admittance		|Yfs|	V_{DS}=10V, I_D=15A	4.0	7.0	-	S
Drain-Source ON Resistance		$R_{DS(ON)}$	I_D=15A, V_{GS}=10V	-	-	0.24	Ω
Source Drain Forward Voltage		V_{SDF}	I_S=15A, V_{GS}=0	-	-	1.8	V
Input Capacitance		Ciss	V_{DS}=10V, V_{GS}=0, f=1MHz	-	2000	-	pF
Switching Time	Rise Time	t_r		-	300	600	ns
	Turn-on Time	ton		-	350	700	ns
	Fall Time	t_f		-	200	400	ns
	Turn-off Time	toff		-	600	1000	ns
Reverse Recovery Time		t_{rr}	I_D=-15A, R_G=220Ω, V_{GS}=-15V, di/dt=60A/μs	-	250	600	ns

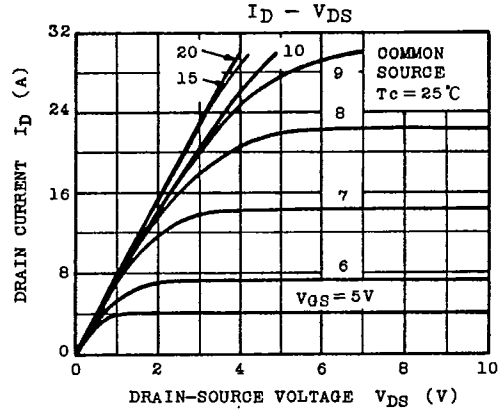
2SK447
MG15D4GM1
MG15D4HM1
MG15D6EM1

T-39-27

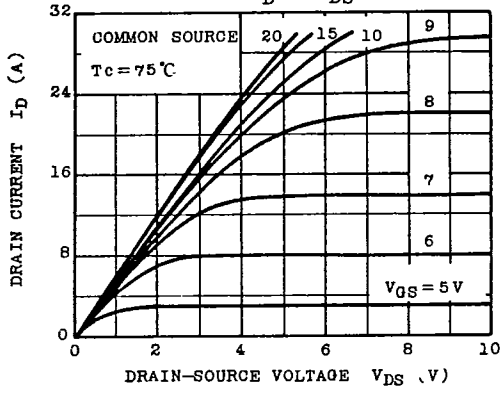
$I_D - V_{DS}$



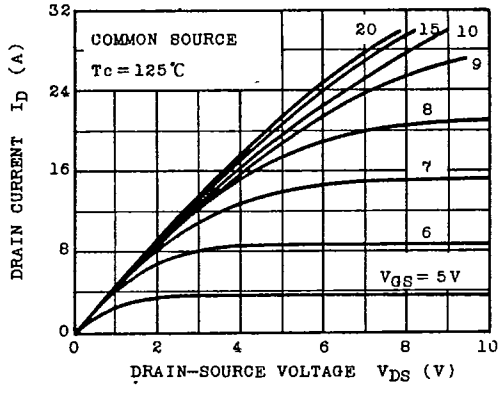
$I_D - V_{DS}$



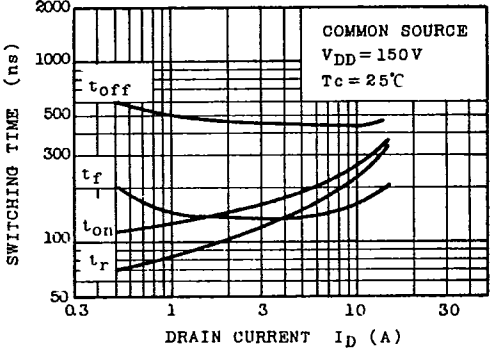
$I_D - V_{DS}$



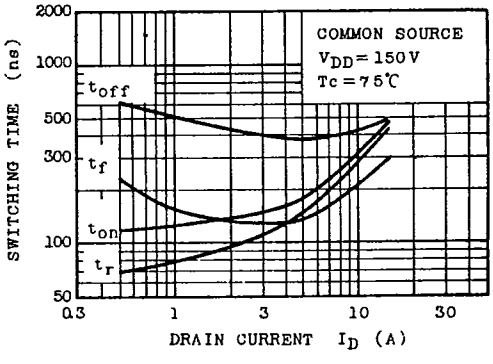
$I_D - V_{DS}$



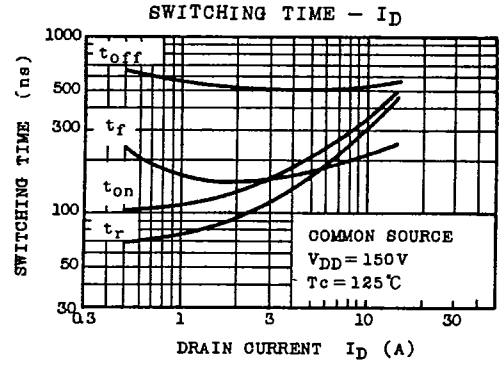
SWITCHING TIME − I_D



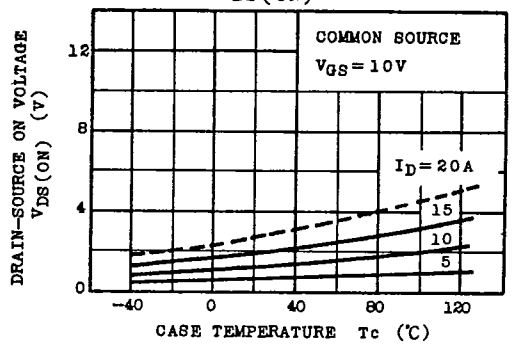
SWITCHING TIME − I_D



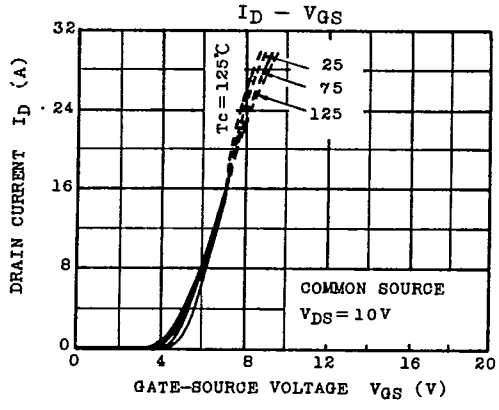
SWITCHING TIME – I_D



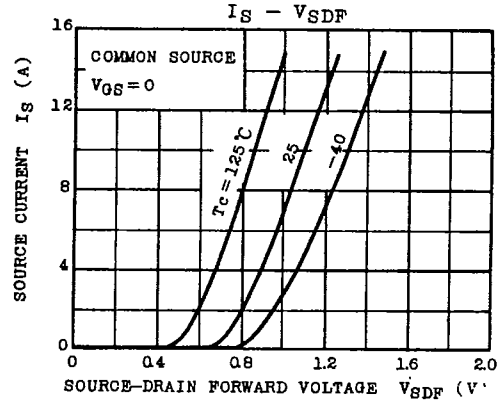
$V_{DS(ON)}$ – Tc



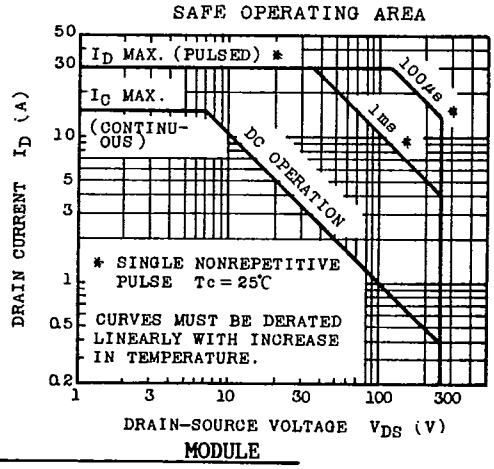
I_D – V_{GS}



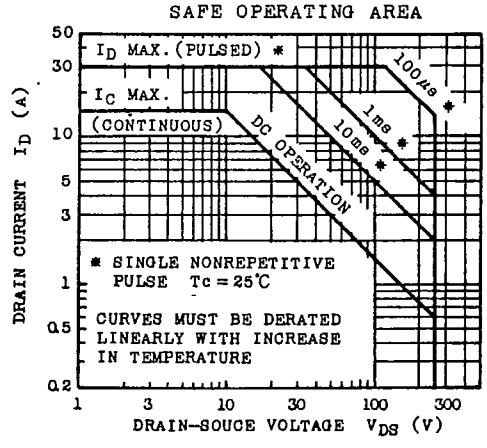
I_S – V_{SDF}



SAFE OPERATING AREA



SAFE OPERATING AREA

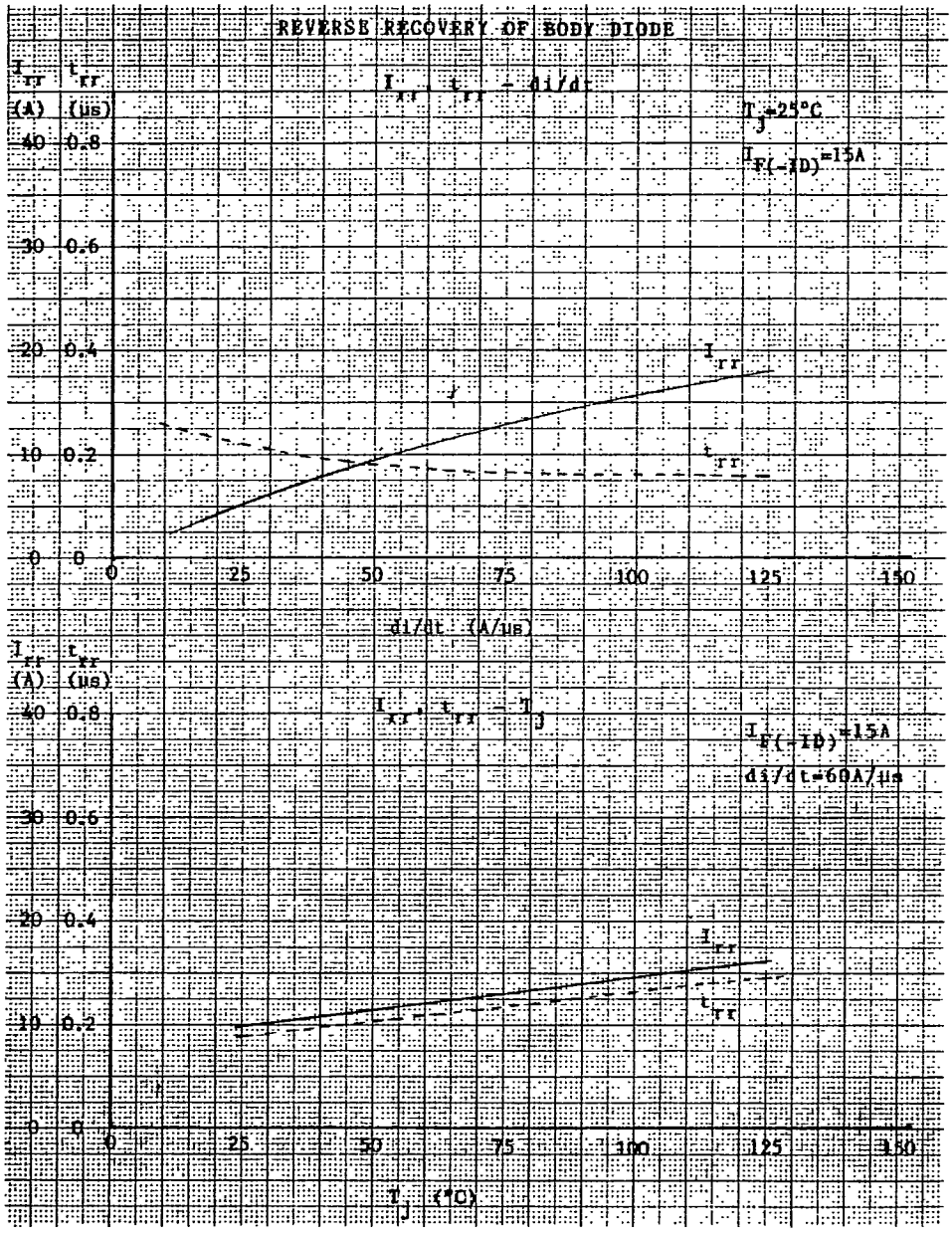


MODULE

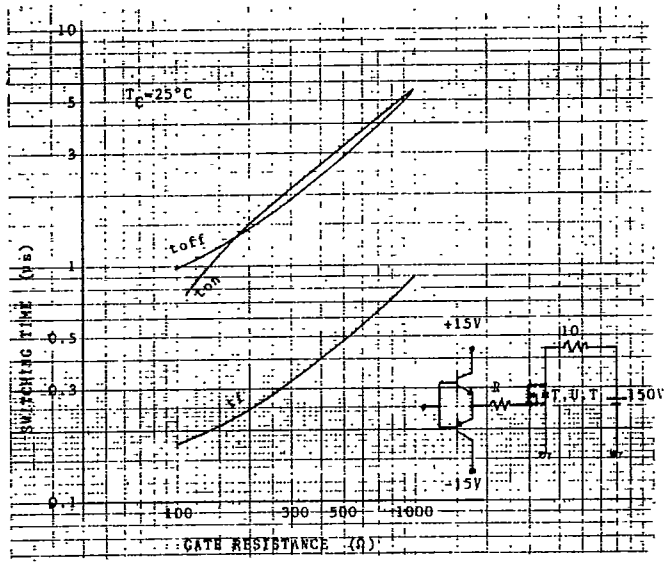
2SK447

TOSHIBA CORPORATION

GT1A2


REVERSE RECOVERY OF BODY DIODE
I_{rr} (A)
t_{rr} (μs)
I_{rr}, t_{rr} - di/dt
T_J=25°C
$I_{F(-ID)}$=15A
40 0.8
30 0.6
20 0.4
10 0.2
0 0
0 25 50 75 100 125 150
di/dt (A/μs)
I_{rr}, t_{rr} - T_J
$I_{F(-ID)}$=15A
di/dt=60A/μs
T_J (°C)

GATE RESISTANCE DEPENDENCE OF SWITCHING TIME



REVERSE BIAS DEPENDENCE OF dv/dt CURRENT