

Transistors

2.5V Drive Nch+Pch MOSFET

US6M2

● Structure

Silicon N-channel MOSFET /
Silicon P-channel MOSFET

● Features

- 1) Nch MOSFET and Pch MOSFET are put in TUMT6 package.
- 2) High-speed switching, low On-resistance.
- 3) Low voltage drive (2.5V drive).
- 4) Built-in G-S Protection Diode.

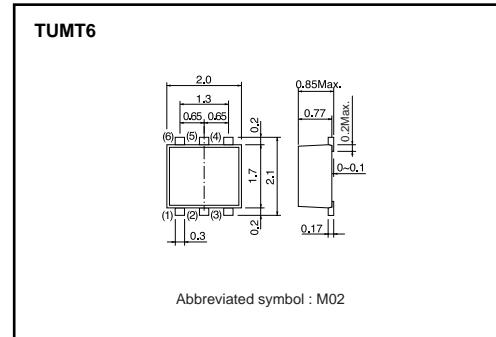
● Applications

Switching

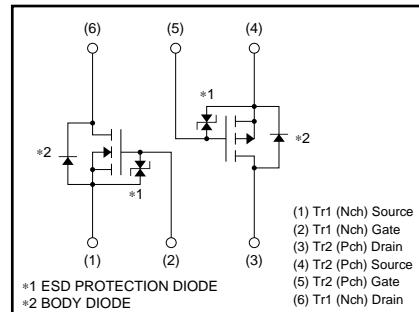
●Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
US6M2		○

●Dimensions (Unit : mm)



● Inner circuit



- **Absolute maximum ratings (Ta=25°C)**

Parameter	Symbol	Limits		Unit	
		Tr1 : Nchannel	Tr2 : Pchannel		
Drain-source voltage	V _{DSS}	30	-20	V	
Gate-source voltage	V _{GSS}	12	-12	V	
Drain current	Continuous	I _D	±1.5	±1	A
	Pulsed	I _{D^P} ^{*1}	±6	±4	A
Source current (Body diode)	Continuous	I _S	0.6	-0.4	A
	Pulsed	I _{S^P} ^{*1}	6	-4	A
Total power dissipation	P _D ^{*2}	1.0		W / TOTAL	
		0.7		W / ELEMENT	
Channel temperature	T _{ch}	150		°C	
Storage temperature	T _{stg}	-55 to +150		°C	

*1 Pw≤10μs, Duty cycle≤1%

*2 Mounted on a ceramic board.

- Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	Rth(ch-a)*	125	°C/W / TOTAL
		179	°C/W / ELEMENT

* Mounted on a ceramic board

Transistors

N-ch

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	—	—	10	μA	$V_{GS}=12V, V_{DS}=0V$
Drain-source breakdown voltage	$V_{(BR) DSS}$	30	—	—	V	$I_D= 1mA, V_{GS}=0V$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS}= 30V, V_{GS}=0V$
Gate threshold voltage	$V_{GS (th)}$	0.5	—	1.5	V	$V_{DS}= 10V, I_D= 1mA$
Static drain-source on-state resistance	$R_{DS(on)*}$	—	170	240	$m\Omega$	$I_D= 1.5A, V_{GS}= 4.5V$
		—	180	250	$m\Omega$	$I_D= 1.5A, V_{GS}= 4V$
		—	240	340	$m\Omega$	$I_D= 1.5A, V_{GS}= 2.5V$
Forward transfer admittance	$ Y_{fs} *$	1.5	—	—	S	$V_{DS}= 10V, I_D= 1.5A$
Input capacitance	C_{iss}	—	80	—	pF	$V_{DS}= 10V$
Output capacitance	C_{oss}	—	13	—	pF	$V_{GS}=0V$
Reverse transfer capacitance	C_{rss}	—	12	—	pF	$f=1MHz$
Turn-on delay time	$t_{d(on)*}$	—	7	—	ns	$V_{DD}= 15V$
Rise time	$t_r *$	—	9	—	ns	$I_D= 0.75A$
Turn-off delay time	$t_{d(off)*}$	—	15	—	ns	$V_{GS}= 4.5V$
Fall time	$t_f *$	—	6	—	ns	$R_L= 20\Omega$
Total gate charge	$Q_g *$	—	1.6	2.2	nC	$R_G=10\Omega$
Gate-source charge	$Q_{gs} *$	—	0.5	—	nC	$V_{DD}= 15V, V_{GS}= 4.5V$
Gate-drain charge	$Q_{gd} *$	—	0.3	—	nC	$I_D= 1.5A$
						$R_L= 10\Omega, R_G= 10\Omega$

*Pulsed

●Body diode characteristics (Source-drain) (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_{SD}	—	—	1.2	V	$I_S= 0.6A, V_{GS}=0V$

Transistors

P-ch

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	—	—	10	μA	$V_{GS} = -12V, V_{DS} = 0V$
Drain-source breakdown voltage	$V_{(BR) DSS}$	-20	—	—	V	$I_D = -1mA, V_{GS} = 0V$
Zero gate voltage drain current	I_{DSS}	—	—	-1	μA	$V_{DS} = -20V, V_{GS} = 0V$
Gate threshold voltage	$V_{GS (th)}$	-0.7	—	-2.0	V	$V_{DS} = -10V, I_D = -1mA$
Static drain-source on-state resistance	$R_{DS(on)*}$	—	280	390	$m\Omega$	$I_D = -1A, V_{GS} = -4.5V$
		—	310	430	$m\Omega$	$I_D = -1A, V_{GS} = -4V$
		—	570	800	$m\Omega$	$I_D = -0.5A, V_{GS} = -2.5V$
Forward transfer admittance	$ Y_{fs} *$	0.7	—	—	S	$V_{DS} = -10V, I_D = -0.5A$
Input capacitance	C_{iss}	—	150	—	pF	$V_{DS} = -10V$
Output capacitance	C_{oss}	—	20	—	pF	$V_{GS} = 0V$
Reverse transfer capacitance	C_{rss}	—	20	—	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)*}$	—	9	—	ns	$V_{DD} = -15V$
Rise time	$t_r *$	—	8	—	ns	$I_D = -0.5A$
Turn-off delay time	$t_{d(off)*}$	—	25	—	ns	$V_{GS} = -4.5V$
Fall time	$t_f *$	—	10	—	ns	$R_L = 30\Omega$
Total gate charge	$Q_g *$	—	2.1	—	nC	$R_G = 10\Omega$
Gate-source charge	$Q_{gs} *$	—	0.5	—	nC	$V_{DD} = -15V, V_{GS} = -4.5V$
Gate-drain charge	$Q_{gd} *$	—	0.5	—	nC	$I_D = -1A$
						$R_L = 15\Omega, R_G = 10\Omega$

*Pulsed

●Body diode characteristics (Source-drain) (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V_{SD}	—	—	-1.2	V	$I_S = -0.4A, V_{GS} = 0V$

Appendix

Notes

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us6m2 - Web Page[Distribution Inventory](#)

Part Number	us6m2
Package	TUMT6
Unit Quantity	3000
Minimum Package Quantity	3000
Packing Type	Taping
Constitution Materials List	inquiry
RoHS	Yes