

4AM15

Silicon N Channel/P Channel Power MOS FET Array

Application

High speed power switching

Features

- Low on-resistance
 N Channel : $R_{DS(on)} \leq 0.5\Omega$,
 $V_{GS} = 10V$, $I_D = 2A$
 P Channel : $R_{DS(on)} \leq 0.9\Omega$,
 $V_{GS} = -10V$, $I_D = -2A$
- Low drive current
- High speed switching
- High density mounting
- Suitable for H-bridged motor driver

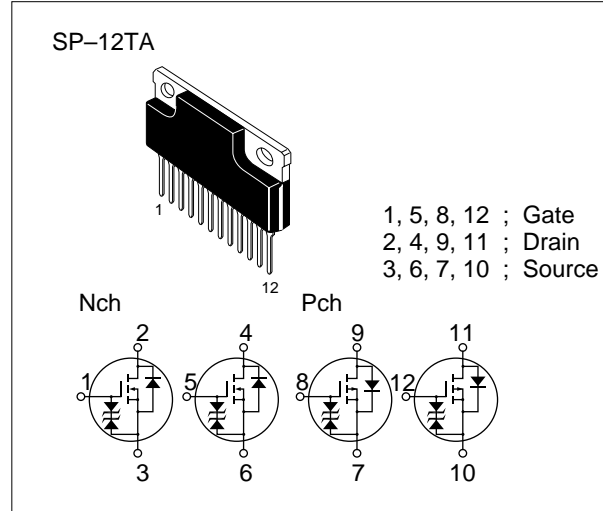


Table 1 Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Item	Symbol	Ratings		Unit
		Nch	Pch	
Drain to source voltage	V_{DSS}	200	-200	V
Gate to source voltage	V_{GSS}	± 20	± 20	V
Drain current	I_D	4	-4	A
Drain peak current	$I_{D(pulse)}^*$	16	-16	A
Body-drain diode reverse drain current	I_{DR}	4	-4	A
Channel dissipation ($T_c = 25^\circ\text{C}$)	Pch**	32		W
	Pch**	4.0		W
Channel temperature	T_{ch}	150		$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150		$^\circ\text{C}$

* $PW \leq 10 \mu\text{s}$, duty cycle $\leq 1\%$

** 4 Device Operation

Table 2 Electrical Characteristics (Ta = 25°C)

Item	Symbol	N Channel			Unit	Test conditions
		Min	Typ	Max		
Drain to source breakdown voltage	$V_{(BR)DSS}$	200	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	$I_G = \pm 100 \text{ } \mu\text{A}, V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	±10	μA	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	250	μA	$V_{DS} = 160 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	4.0	V	$I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.33	0.5	Ω	$I_D = 2 \text{ A}, V_{GS} = 10 \text{ V}^*$
Forward transfer admittance	$ y_{fs} $	1.5	2.5	—	S	$I_D = 2 \text{ A}$ $V_{DS} = 10 \text{ V}^*$
Input capacitance	C_{iss}	—	750	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	C_{oss}	—	260	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	40	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	19	—	ns	$I_D = 2 \text{ A}$
Rise time	t_r	—	26	—	ns	$V_{GS} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	45	—	ns	$R_L = 15 \text{ } \Omega$
Fall time	t_f	—	24	—	ns	
Body-drain diode forward voltage	V_{DF}	—	1.0	—	V	$I_F = 4 \text{ A}, V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	125	—	ns	$I_F = 4 \text{ A}, V_{GS} = 0,$ $di_F / dt = 100 \text{ A} / \mu\text{s}$

* Pulse Test

■ See characteristic curve of 2SK1957 and 2SJ410

Table 3 Electrical Characteristics (Ta = 25°C)

Item	Symbol	P Channel			Unit	Test conditions
		Min	Typ	Max		
Drain to source breakdown voltage	$V_{(BR)DSS}$	-200	—	—	V	$I_D = -10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	-250	μA	$V_{DS} = -160 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	-2.0	—	-4.0	V	$I_D = -1 \text{ mA}$, $V_{DS} = -10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.7	0.9	Ω	$I_D = -2 \text{ A}$, $V_{GS} = -10 \text{ V}^*$
Forward transfer admittance	$ y_{fs} $	2.0	3.0	—	S	$I_D = -2 \text{ A}$ $V_{DS} = -10 \text{ V}^*$
Input capacitance	C_{iss}	—	920	—	pF	$V_{DS} = -10 \text{ V}$
Output capacitance	C_{oss}	—	290	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	70	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	17	—	ns	$I_D = -2 \text{ A}$
Rise time	t_r	—	40	—	ns	$V_{GS} = -10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	85	—	ns	$R_L = 15 \text{ }\Omega$
Fall time	t_f	—	45	—	ns	
Body-drain diode forward voltage	V_{DF}	—	-1.0	—	V	$I_F = -4 \text{ A}$, $V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	170	—	ns	$I_F = -4 \text{ A}$, $V_{GS} = 0$, $diF / dt = 100 \text{ A} / \mu\text{s}$

* Pulse Test

