Silicon N-Channel Power MOS FET Module

HITACHI

Application

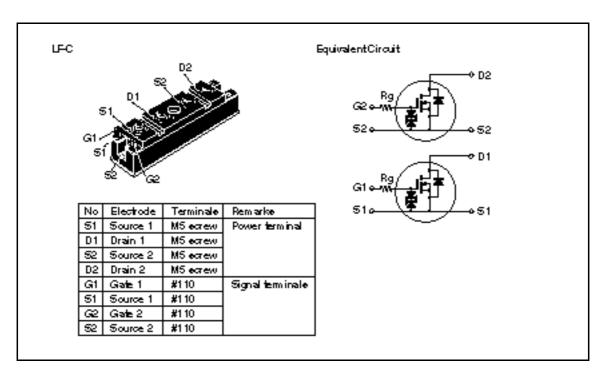
High Speed Power Switching

Features

- Equipped with Power MOS FET
- · Low on-resistance
- · High speed switching
- · Low drive current
- Wide area of safe operation
- Inherent parallel diode between source and drain
- · Isolated base from Terminal
- Suitable for motor driver, switching regulator and etc.



Outline



Absolute Maximum Ratings (Ta = 25°C) (Per FET chip)

Item	Symbol	Rating	Unit
Drain source voltage	V _{DSS}	500	V
Gate source voltage	V _{GSS}	±20	V
Drain current	I _D	50	А
Drain peak current	I _{D(peak)}	100	А
Body to drain diode reverse drain current	I _{DR}	50	А
Body to drain diode reverse drain peak current	I _{DR(peak)}	100	А
Channel dissipation	Pch*1	300	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-45 to +125	°C
Insulation dielectric	Visol*2	2000	V

Notes: 1. Value at Tc = 25°C

2. Base to terminals AC minute

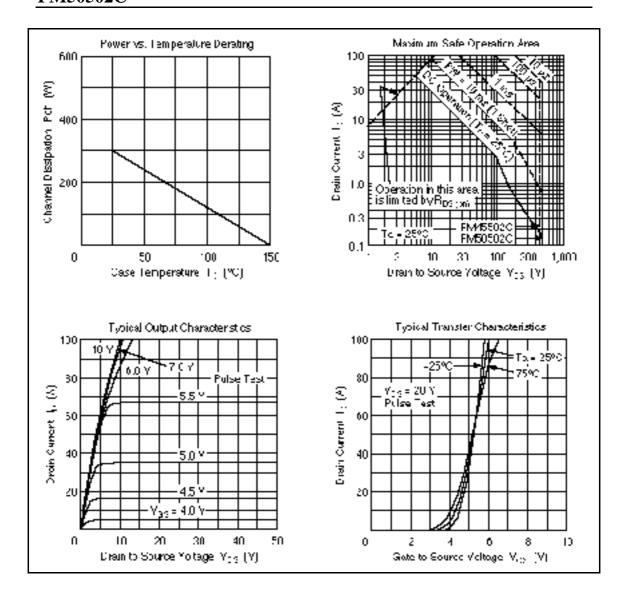
Electrical Characteristics (Ta = 25°C) (Per FET chip)

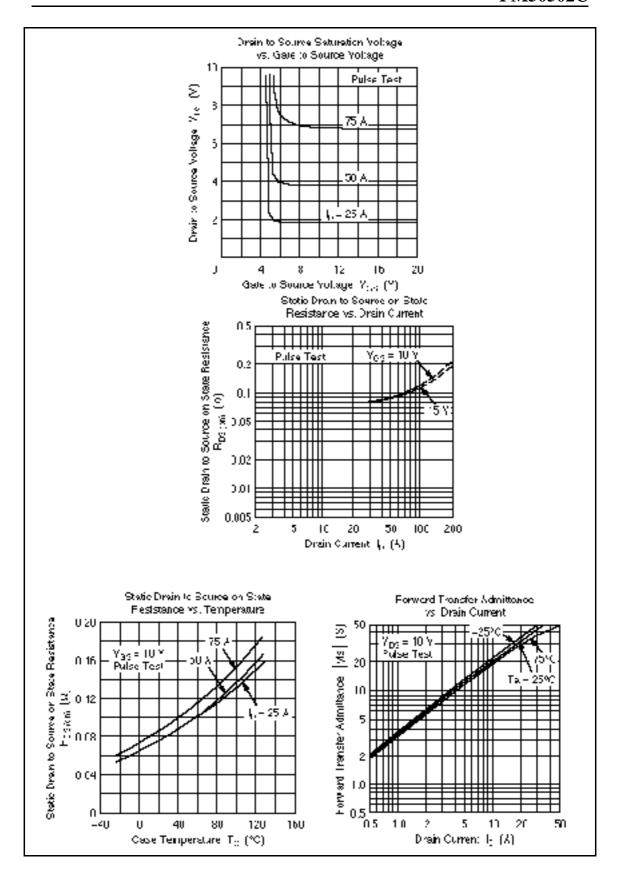
Item	Symbol	Min	Тур	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	500	_	_	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source leak current	I _{GSS}	_	_	±50	μA	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	_	_	V	$I_{G} = \pm 100 \ \mu A, \ V_{DS} = 0$
Zero gate voltage drain current	I _{DSS}	_	_	1	mA	$V_{DS} = 400 \text{ V}, V_{GS} = 0$
Gate to source threshold voltage	$V_{\text{GS(th)}}$	1.5	_	4.0	V	$I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}$
Drain to source saturation voltage	$V_{DS(on)}$	_	2.25	3.0	V	$I_D = 25 \text{ A}, V_{GS} = 10 \text{ V}^{*1}$
Static Drain to source on state resistance	R _{DS(on)}	_	0.09	0.12		$I_D = 25 \text{ A}, V_{GS} = 10 \text{ V}^{*1}$
Forward transfer admittance	y _{fs}	25	40	_	S	$I_D = 25 \text{ A}, V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	Ciss	_	10250	_	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$
Output capacitance	Coss	_	3600	_	pF	f = 1 MHz
Reverse transfer capacitance	Crss	_	400	_	pF	_
Turn-on delay time	t _{d(on)}	_	150	_	ns	$I_D = 25 \text{ A}, V_{GS} = 10 \text{ V},$
Rise time	t _r	_	700	_	ns	$R_{L} = 1.2$
Turn-off delay time	t _{d(off)}	_	800	_	ns	_
Fall time	t _f	_	600	_	ns	_
Body to drain diode forward voltage	V_{DF}	_	1.2	_	V	$I_F = 25 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	t _{rr}		200		ns	$I_F = 25 \text{ A}, V_{GS} = 0,$ diF/dt = 100 A/ μ s

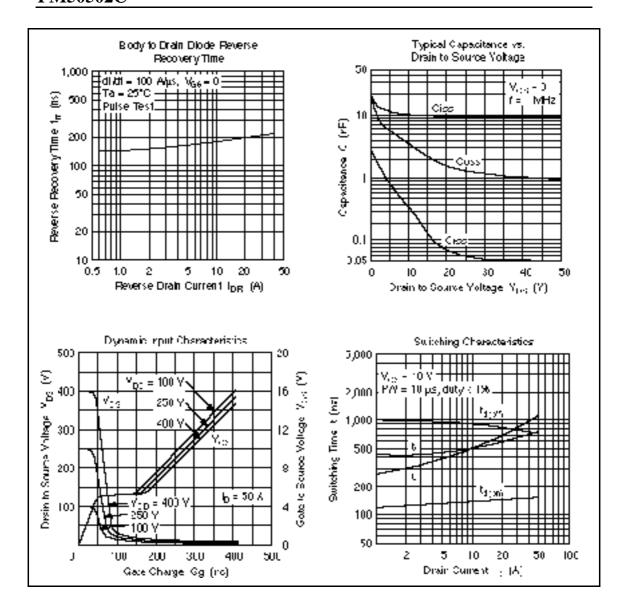
Note: 1. Pulse Test

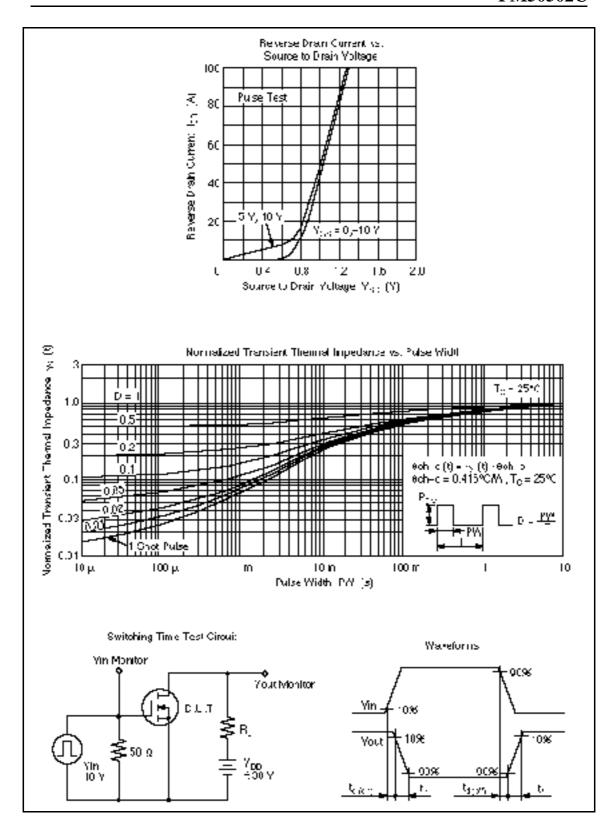
Mechanical Characteristics

Item	Symbol	Condition	Rating	Unit
Fixing strength	_	Mounting into main-terminal with M5 screw	15 to 20	kg•cm
	_	Mounting into heat sink with M6 screw	20 to 30	kg•cm
Weight	_	Typical value	300	g









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