Ordering number : ENA1141B

SANYO Semiconductors

DATA SHEET

N-Channel Silicon MOSFET

EMH2407 — General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- Best suited for LiB charging and discharging switch.
- Common-drain type.
- 2.5V drive.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		20	V
Gate-to-Source Voltage	V_{GSS}		±12	V
Drain Current (DC)	I_D		6	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	40	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (900mm²×0.8mm) 1unit	1.3	W
Total Dissipation	P_T	When mounted on ceramic substrate (900mm²×0.8mm)	1.4	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	20			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±10	μA
Cutoff Voltage	$V_{GS(off)}$	V_{DS}=10V, I_D=1mA	0.5		1.3	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=10V, I_D=3A	3	5		S

Marking : LG

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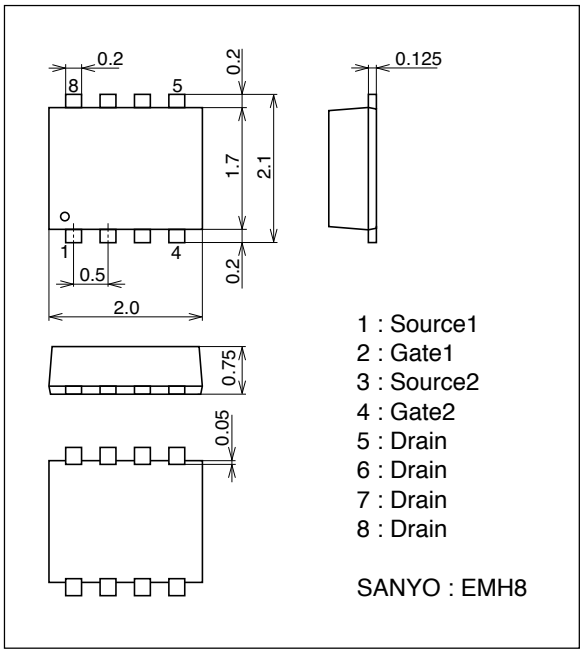
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=3A, V_{GS}=4.5V	13	19	25	mΩ
	$R_{DS}(on)2$	I_D=3A, V_{GS}=4V	14	20	26	mΩ
	$R_{DS}(on)3$	I_D=1.5A, V_{GS}=2.5V	16	28	39	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		580		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		95		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		75		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		310		ns
Rise Time	t_r	See specified Test Circuit.		1020		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		3000		ns
Fall Time	t_f	See specified Test Circuit.		2250		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=4.5V, I_D=6A		6.3		nC
Gate-to-Source Charge	Qgs	V_{DS}=10V, V_{GS}=4.5V, I_D=6A		0.83		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=10V, V_{GS}=4.5V, I_D=6A		1.9		nC
Diode Forward Voltage	V_{SD}	I_S=6A, V_{GS}=0V		0.78	1.2	V

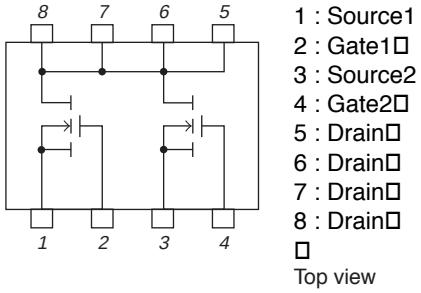
Package Dimensions

unit : mm (typ)

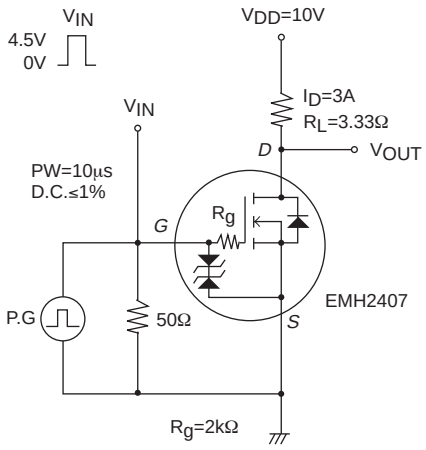
7045-006

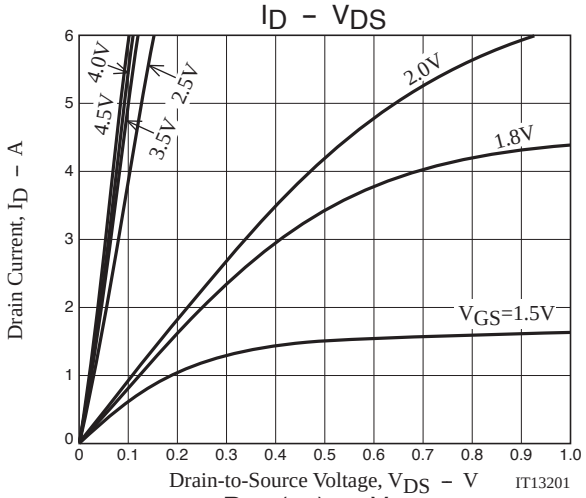


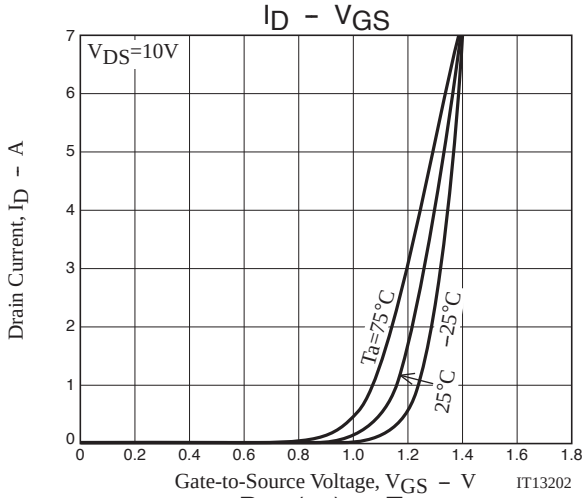
Electrical Connection

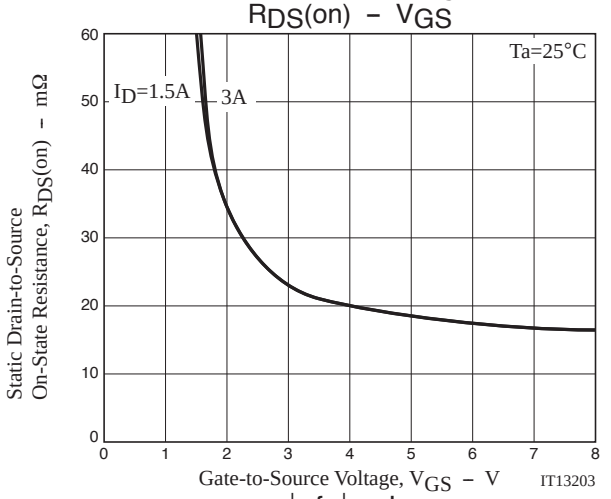


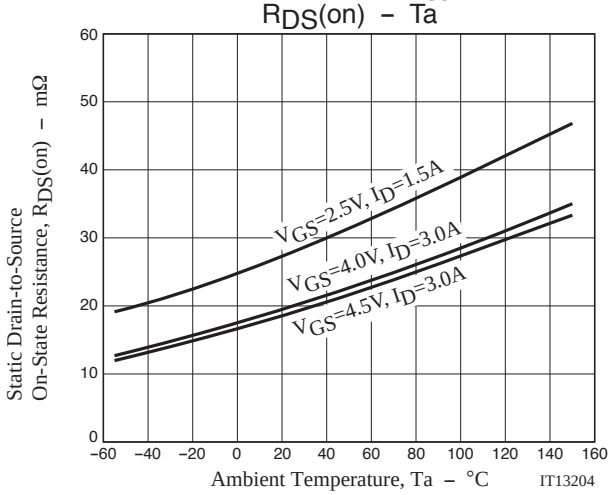
Switching Time Test Circuit

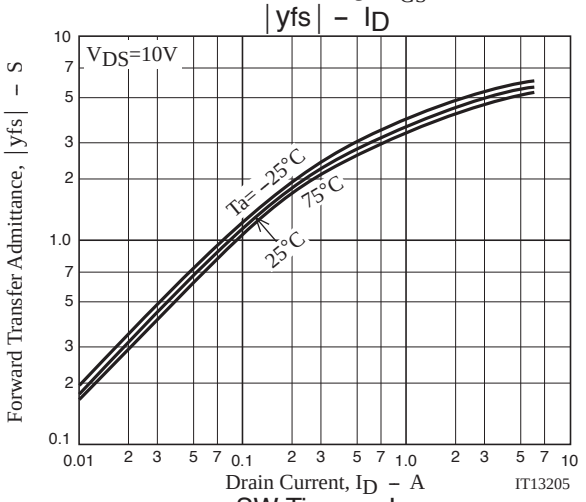


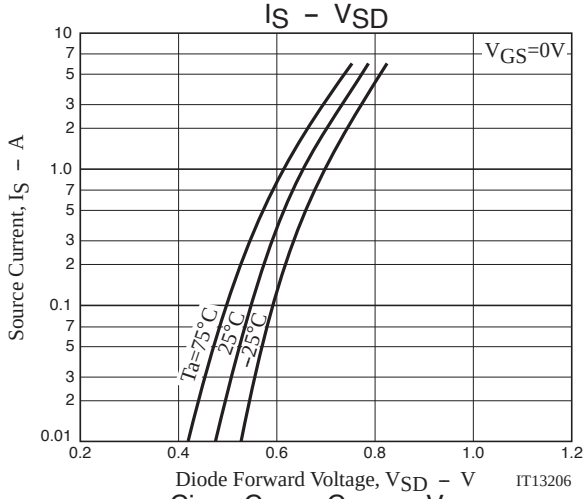

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT13201
4.0V
4.5V
3.5V
2.5V
2.0V
1.8V
VGS=1.5V

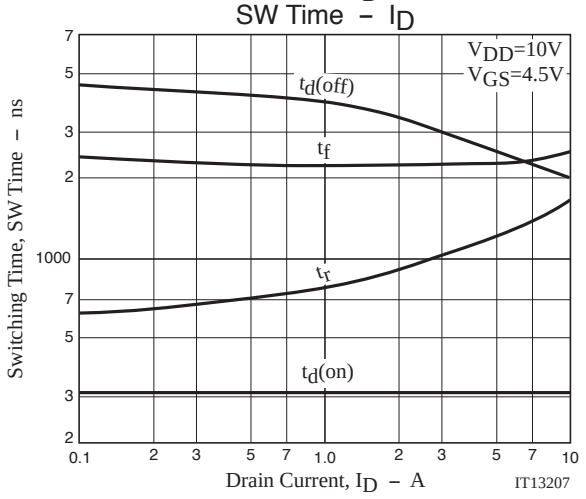

ID – VGS
VDS=10V
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT13202
Ta=75°C
25°C
–25°C

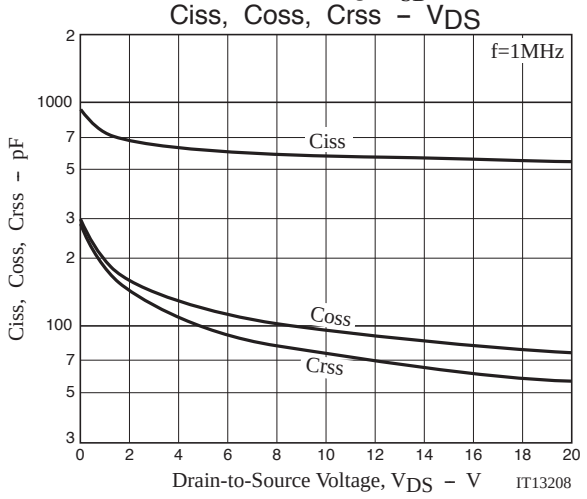

RDS(on) – VGS
Ta=25°C
ID=1.5A
3A
Static Drain-to-Source
On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT13203

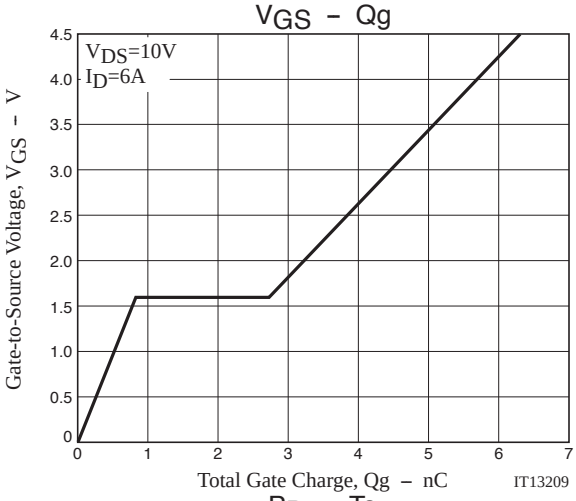

RDS(on) – Ta
Static Drain-to-Source
On-State Resistance, RDS(on) – mΩ
VGS=2.5V, ID=1.5A
VGS=4.0V, ID=3.0A
VGS=4.5V, ID=3.0A
Ambient Temperature, Ta – °C
IT13204

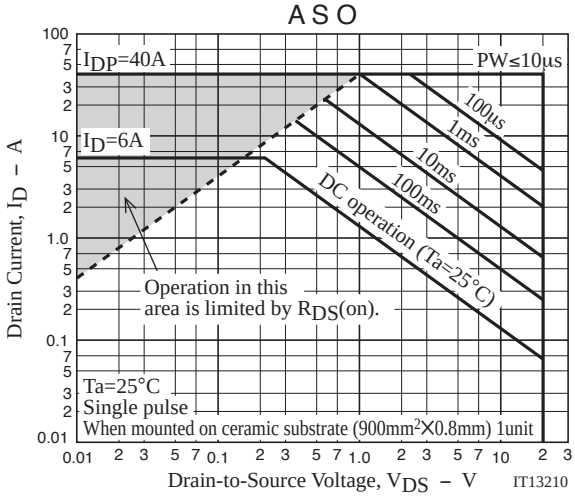

|yfs| – ID
VDS=10V
Forward Transfer Admittance, |yfs| – S
Ta= –25°C
75°C
25°C
Drain Current, ID – A
IT13205

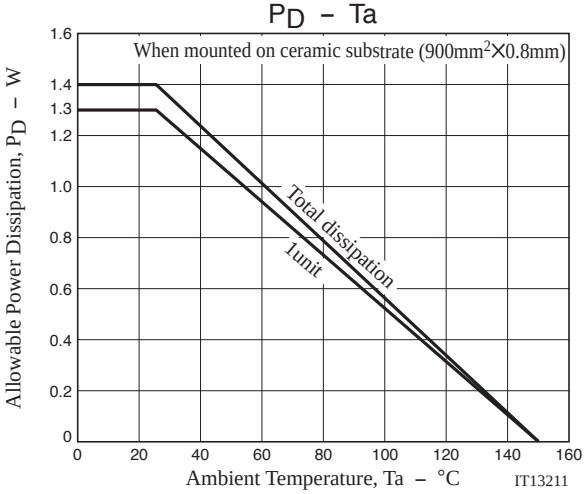

IS – VSD
VGS=0V
Source Current, IS – A
Ta=75°C
25°C
–25°C
Diode Forward Voltage, VSD – V
IT13206


SW Time – ID
VDD=10V
VGS=4.5V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT13207


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT13208







Note on usage : Since the EMH2407 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.ged objects.ged objects.

This catalog provides information as of September, 2008. Specifications and information herein are subject to change without notice.