P-Channel 20-V (D-S) MOSFET

Features

- ON-resistance $R_{DS(on)}$1 : 20mΩ(typ.)
- 1.8V drive
- Protection diode in
- Input Capacitance Ciss=1100pF(typ.)
- Halogen free compliance

Specifications

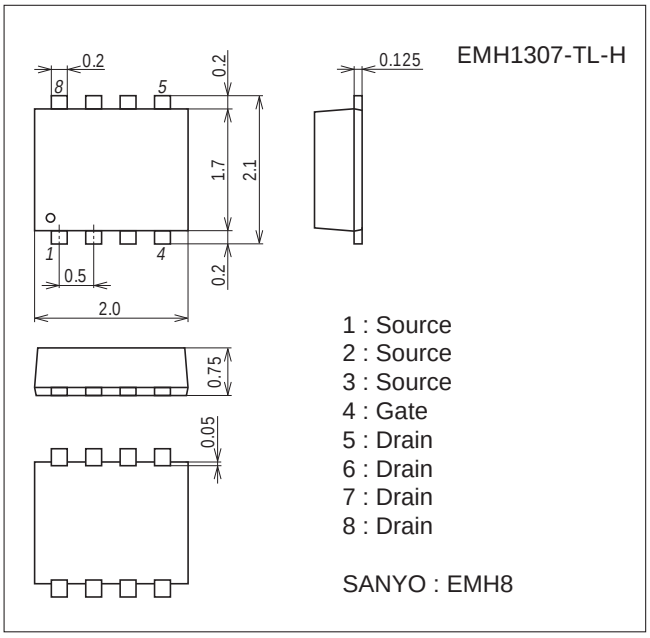
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		−20	V
Gate-to-Source Voltage	V_{GSS}		±10	V
Drain Current (DC)	I_D		−6.5	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−26	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (1200mm^2×0.8mm)	1.5	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Package Dimensions

unit : mm (typ)

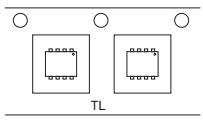
7045-001



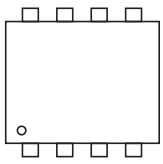
Product & Package Information

- Package : EMH8
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

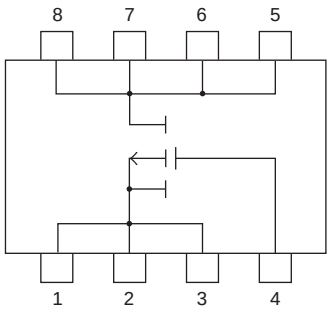
Taping Type : TL



Marking



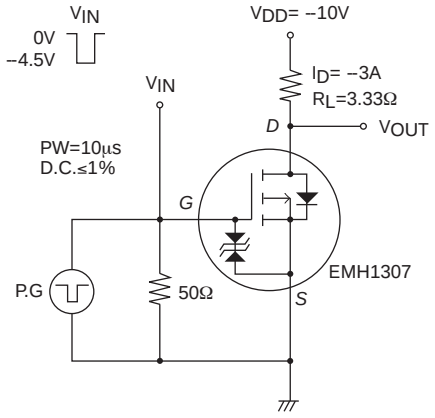
Electrical Connection



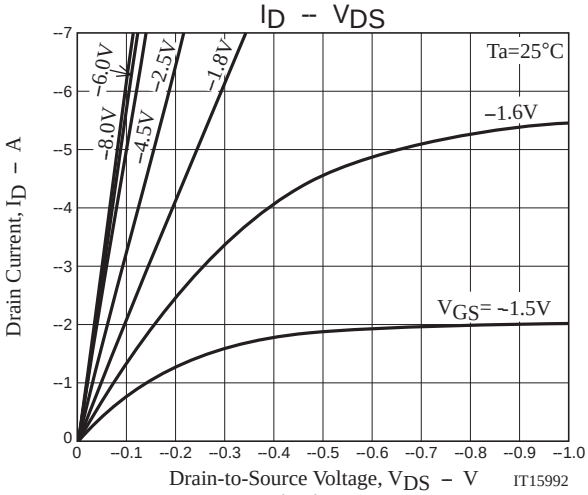
Electrical Characteristics at Ta=25°C

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	−0.4		−1.3	V
Forward Transfer Admittance	| yfs |	V_{DS}=−10V, I_D=−3A		8.2		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=−3A, V_{GS}=−4.5V		20	26	mΩ
	R_{DS}(on)2	I_D=−1.5A, V_{GS}=−2.5V		31	44	mΩ
	R_{DS}(on)3	I_D=−0.5A, V_{GS}=−1.8V		49	78	mΩ
Input Capacitance	Ciss	V_{DS}=−10V, f=1MHz		1100		pF
Output Capacitance	Coss			210		pF
Reverse Transfer Capacitance	Crss			160		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		12.8		ns
Rise Time	t_r			55		ns
Turn-OFF Delay Time	t_d(off)			120		ns
Fall Time	t_f			88		ns
Total Gate Charge	Qg	V_{DS}=−10V, V_{GS}=−4.5V, I_D=−6.5A		13		nC
Gate-to-Source Charge	Qgs			1.9		nC
Gate-to-Drain “Miller” Charge	Qgd			3.7		nC
Diode Forward Voltage	V_{SD}	I_S=−6.5A, V_{GS}=0V		−0.8	−1.2	V

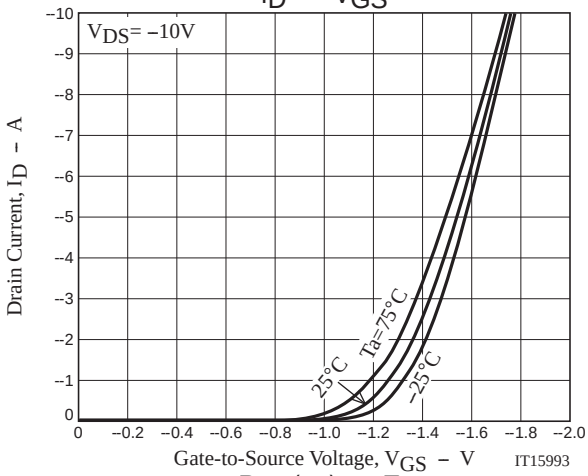
Switching Time Test Circuit



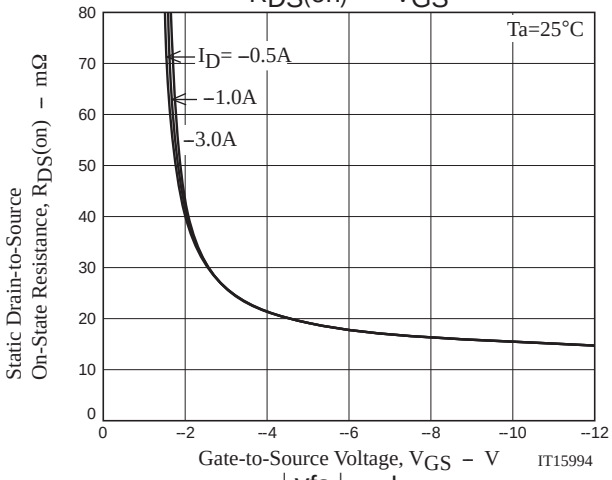
I_D -- V_{DS}



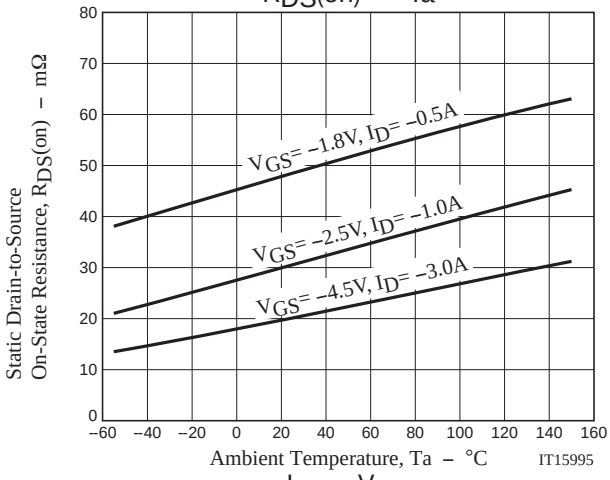
I_D -- V_{GS}



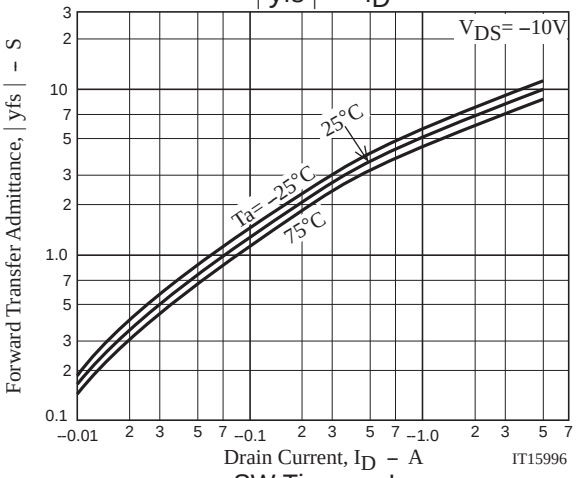
$R_{DS(on)}$ -- V_{GS}



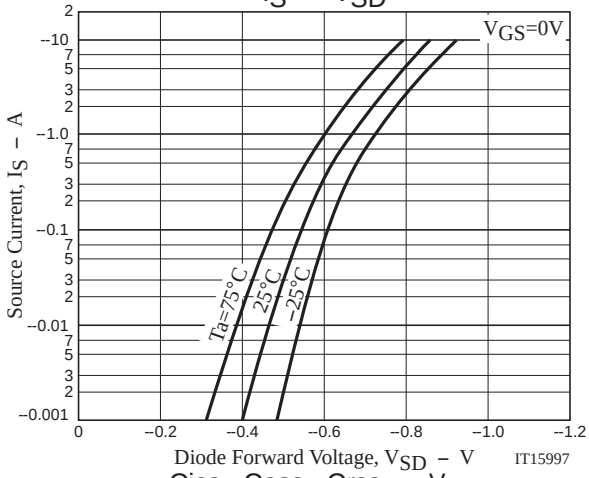
$R_{DS(on)}$ -- Ta



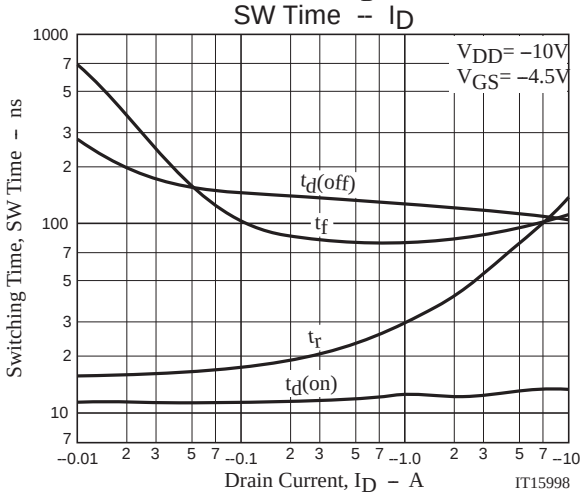
$|y_{fs}|$ -- I_D



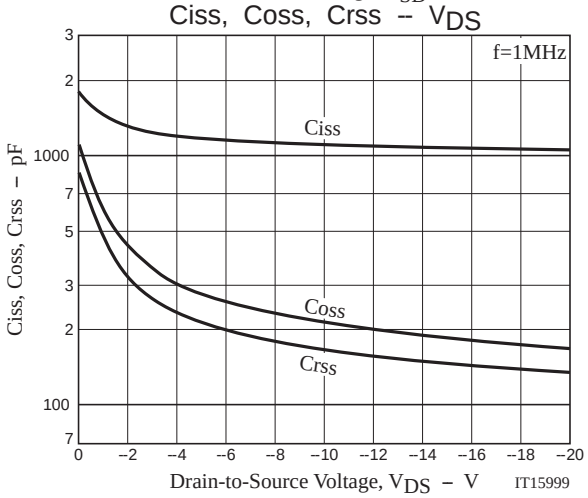
I_S -- V_{SD}

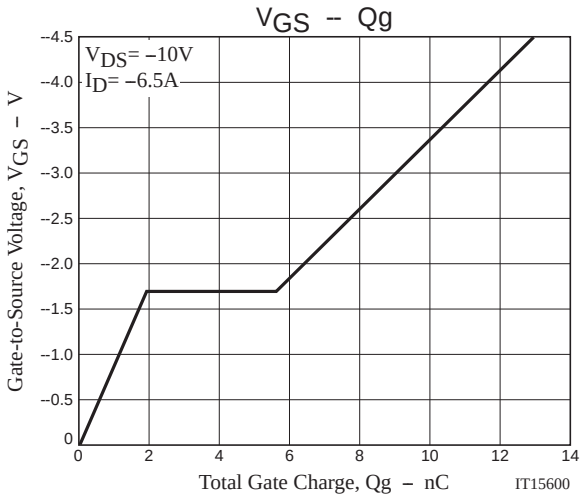


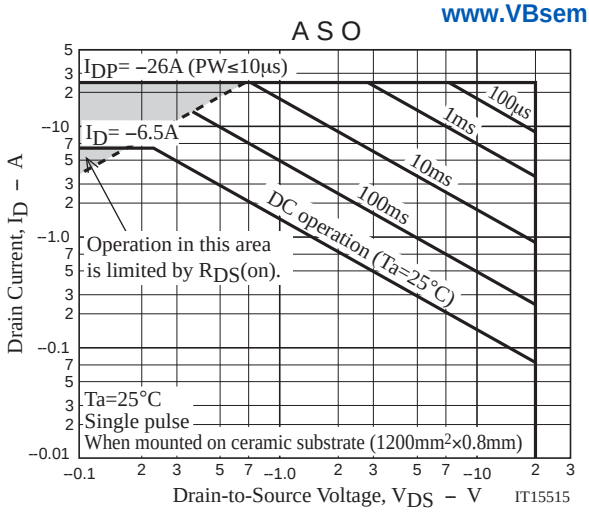
SW Time -- I_D

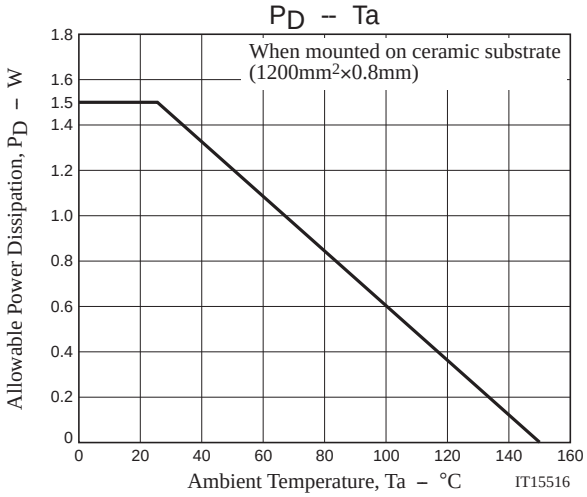


Ciss, Coss, Crss -- V_{DS}



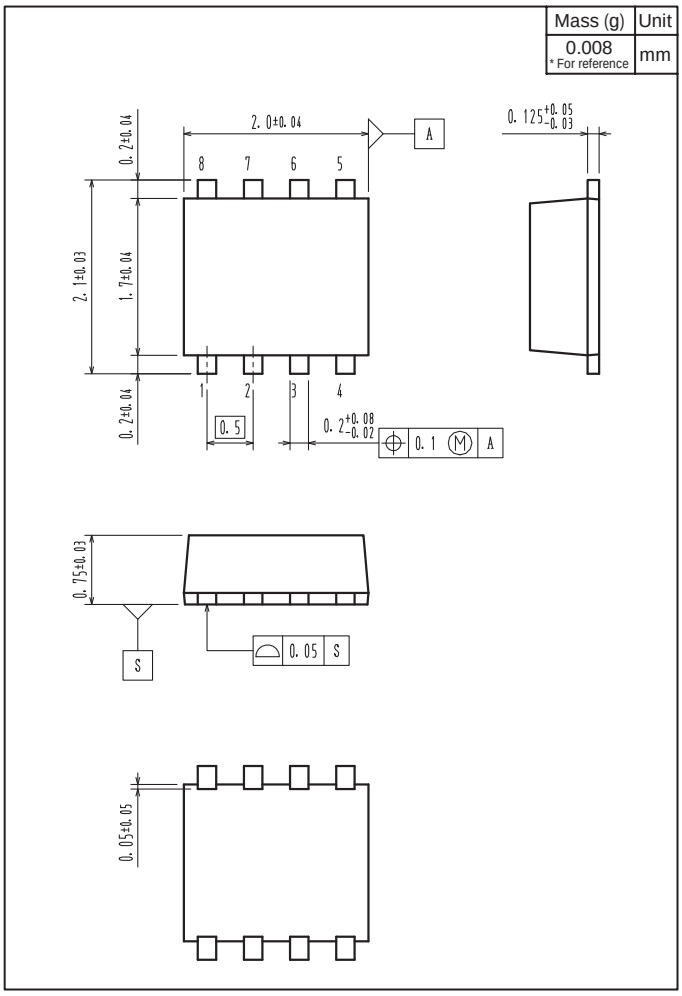

VGS – Qg
VDS= –10V
ID= –6.5A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT15600


A S O
IDP= –26A (PW≤10μs)
ID= –6.5A
100μs
1ms
10ms
100ms
DC operation (Ta=25°C)
Operation in this area
is limited by RDS(on).
Ta=25°C
Single pulse
When mounted on ceramic substrate (1200mm2×0.8mm)
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT15515

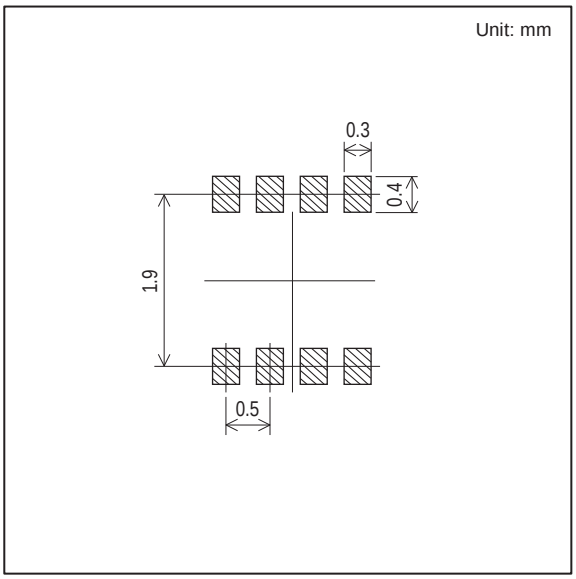

PD – Ta
When mounted on ceramic substrate
(1200mm2×0.8mm)
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT15516

Outline Drawing

EMH1307-TL-H



Land Pattern Example



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