Ordering number : ENA1284

SANYO Semiconductors

DATA SHEET

P-Channel Silicon MOSFET

MCH6657 — General-Purpose Switching Device Applications

Features

- Low-ON-reisistance.
- 4V drive.
- Composite type with 2 MOSFETs contained in a single package, facilitating high-density mounting.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		−30	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		−0.7	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−2.8	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (900mm^2×0.8mm) 1unit	0.8	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	−30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=−30V, V_{GS}=0V			−1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=−10V, I_D=−1mA	−1.2		−2.6	V
Forward Transfer Admittance	|yfs|	V_{DS}=−10V, I_D=−40mA	0.36	0.6		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=−400mA, V_{GS}=−10V		0.69	0.9	Ω
	R_{DS}(on)2	I_D=−200mA, V_{GS}=−4V		1.4	2.0	Ω

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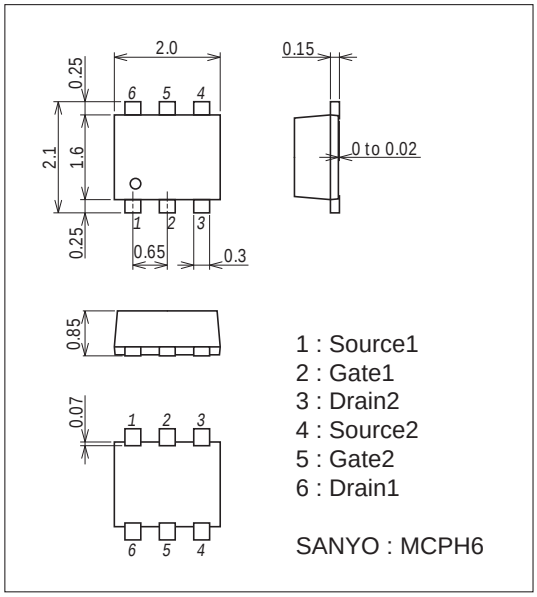
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V_{DS}=−10V, f=1MHz		53		pF
Output Capacitance	Coss	V_{DS}=−10V, f=1MHz		16		pF
Reverse Transfer Capacitance	Crss	V_{DS}=−10V, f=1MHz		10		pF
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit.		6.6		ns
Rise Time	t_{r}	See specified Test Circuit.		3.4		ns
Turn-OFF Delay Time	t_{d}(off)	See specified Test Circuit.		11.5		ns
Fall Time	t_{f}	See specified Test Circuit.		6.2		ns
Total Gate Charge	Qg	V_{DS}=−10V, V_{GS}=−10V, I_{D}=−700mA		2.0		nC
Gate-to-Source Charge	Qgs	V_{DS}=−10V, V_{GS}=−10V, I_{D}=−700mA		0.45		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=−10V, V_{GS}=−10V, I_{D}=−700mA		0.22		nC
Diode Forward Voltage	V_{SD}	I_{S}=-700mA, V_{GS}=0V		−1.0	−1.5	V

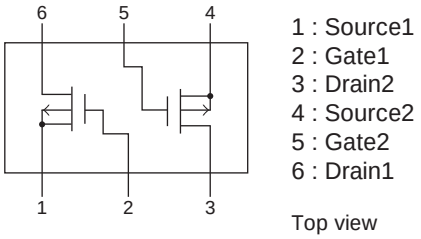
Package Dimensions

unit : mm (typ)

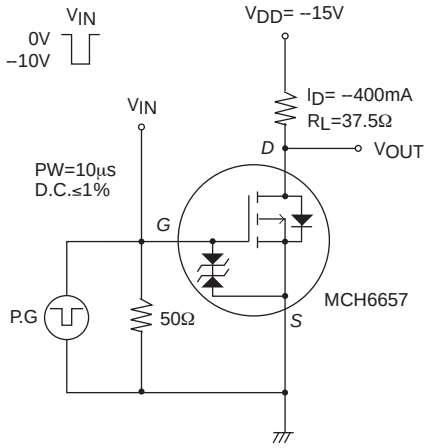
7022A-006

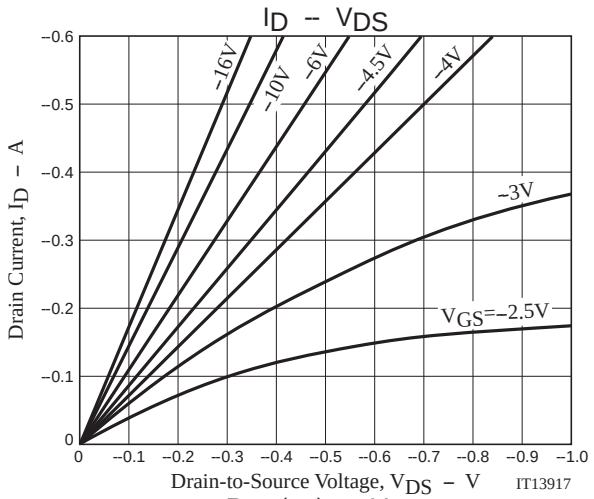


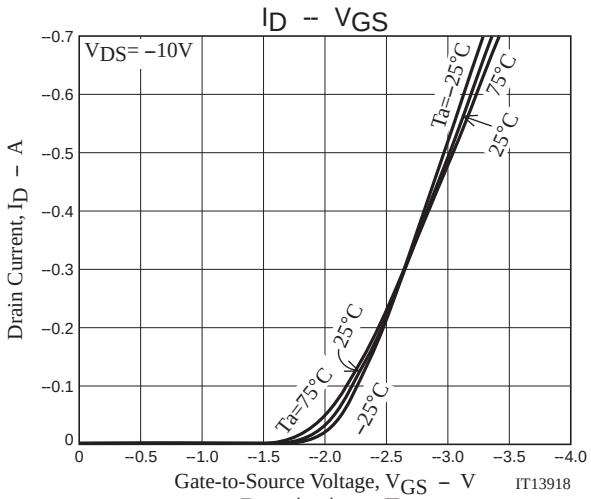
Electrical Connection

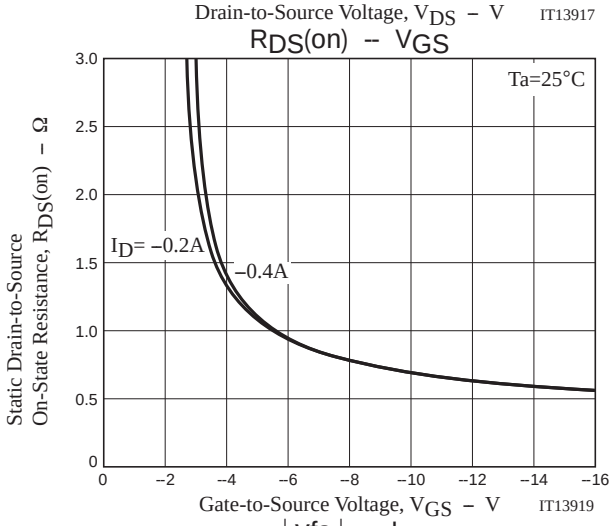


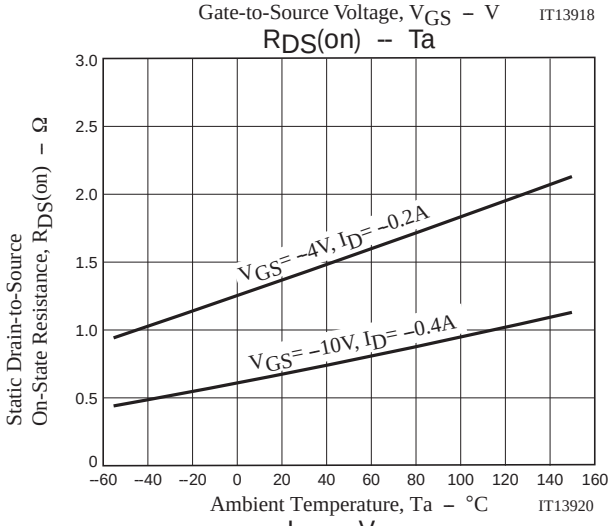
Switching Time Test Circuit

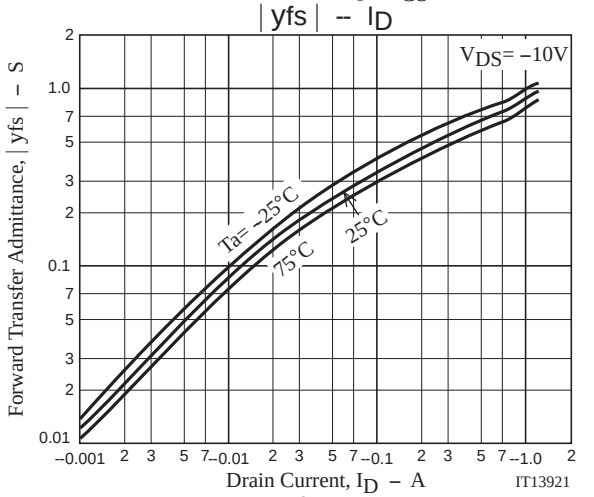


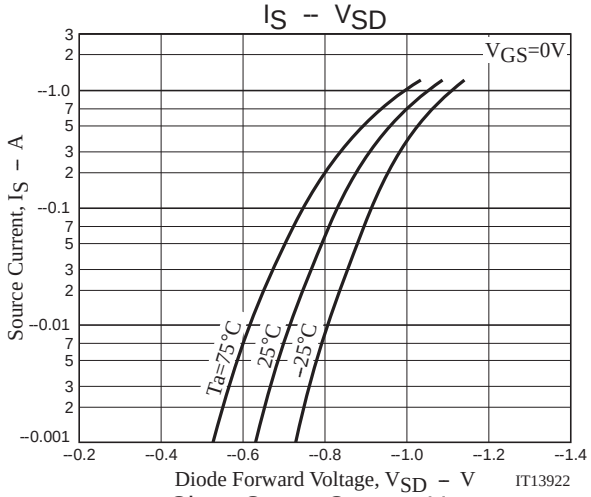

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT13917
–16V
–10V
–6V
–4.5V
–4V
–3V
VGS=–2.5V

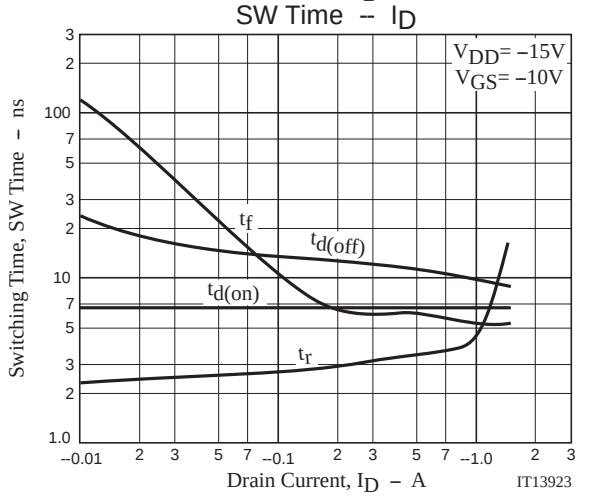

ID – VGS
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT13918
VDS= –10V
Ta=–25°C
75°C
25°C
25°C
Ta=75°C
–25°C

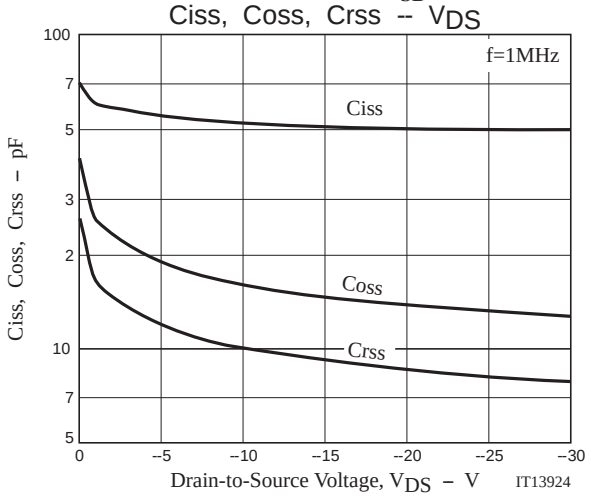

RDS(on) – VGS
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Gate-to-Source Voltage, VGS – V
IT13919
Ta=25°C
ID= –0.2A
–0.4A

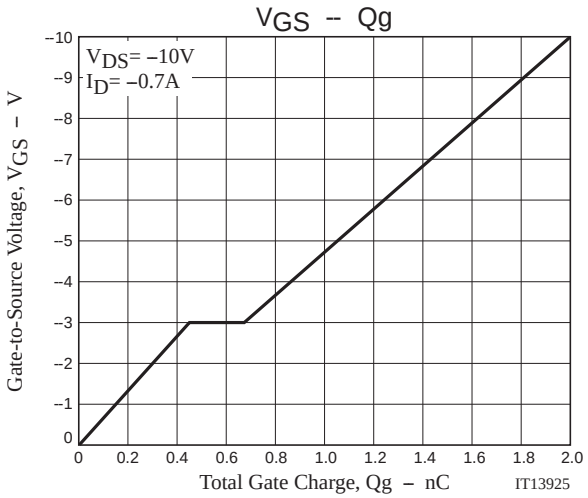

RDS(on) – Ta
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Ambient Temperature, Ta – °C
IT13920
VGS= –4V, ID= –0.2A
VGS= –10V, ID= –0.4A

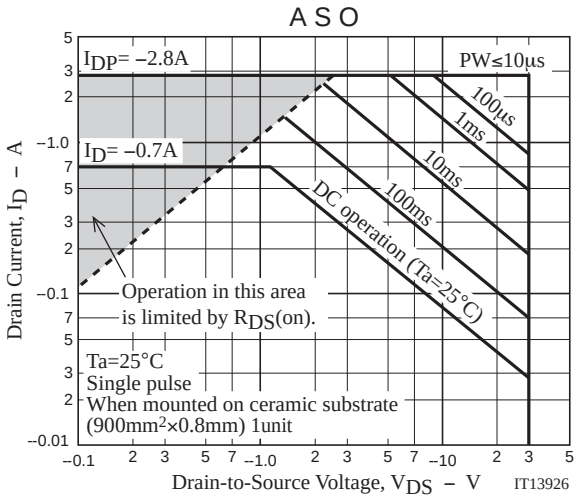

| yfs | – ID
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT13921
VDS= –10V
Ta= –25°C
75°C
25°C

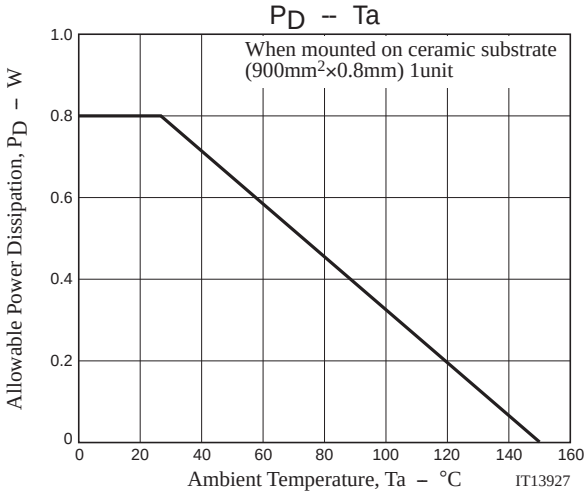

IS – VSD
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT13922
VGS=0V
Ta=75°C
25°C
–25°C


SW Time – ID
Switching Time, SW Time – ns
Drain Current, ID – A
IT13923
VDD= –15V
VGS= –10V
tf
td(off)
td(on)
tr


Ciss, Coss, Crss – VDS
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT13924
f=1MHz
Ciss
Coss
Crss







Note on usage : Since the MCH6657 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.