



SANYO Semiconductors

## DATA SHEET

N-Channel Silicon MOSFET

# CPH3456 — General-Purpose Switching Device Applications

## Features

- ON-resistance  $R_{DS(on)} = 54\text{m}\Omega$ (typ.)
- 1.8V drive
- Halogen free compliance

## Specifications

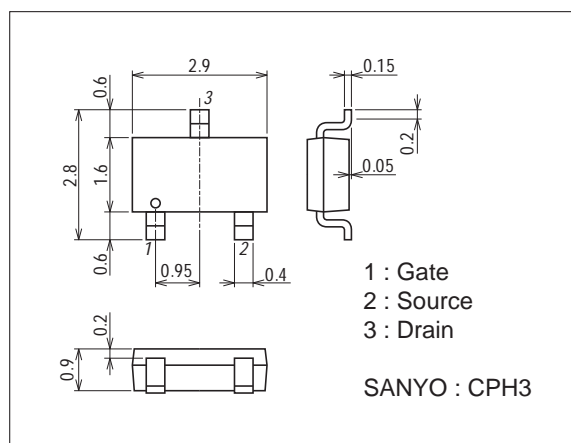
Absolute Maximum Ratings at  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DS}$		20	V
Gate-to-Source Voltage	$V_{GS}$		$\pm 12$	V
Drain Current (DC)	$I_D$		3.5	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	14	A
Allowable Power Dissipation	$P_D$	When mounted on ceramic substrate ( $900\text{mm}^2 \times 0.8\text{mm}$ )	1.0	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		$-55$ to $+150$	$^\circ\text{C}$

## Package Dimensions

unit : mm (typ)

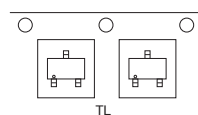
7015A-004



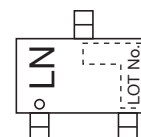
## Product & Package Information

- Package : CPH3
- JEITA, JEDEC : SC-96, SC-95, SOT346, SOT457
- Minimum Packing Quantity : 3,000 pcs./reel

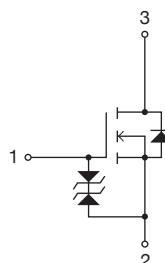
## Packing Type: TL



## Marking



## Electrical Connection

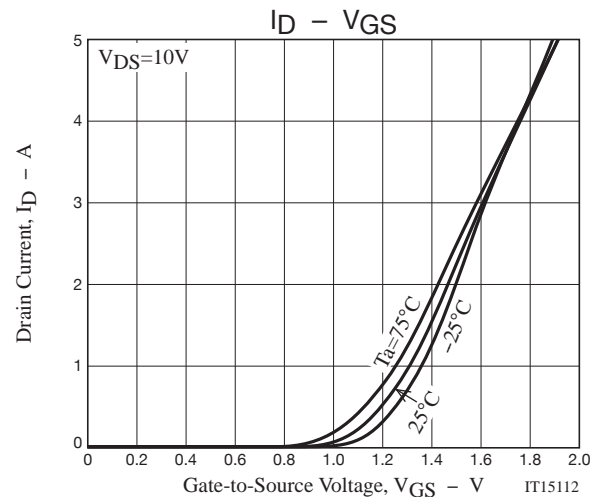
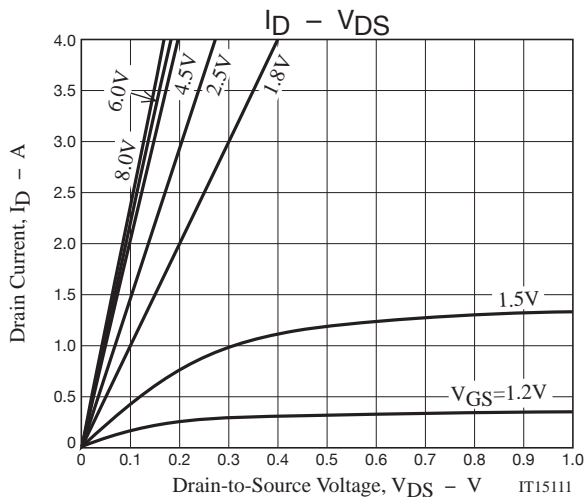
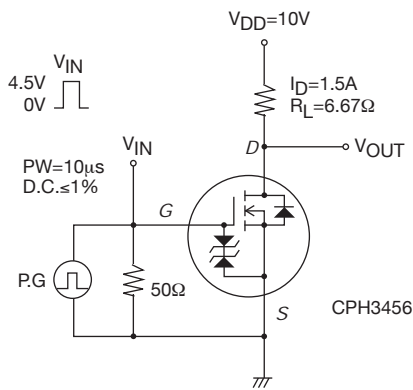




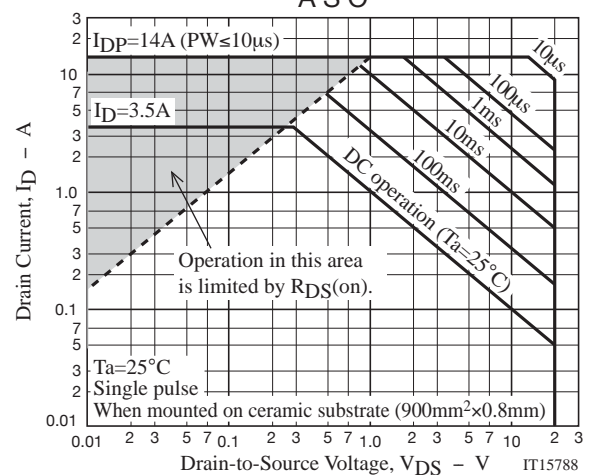
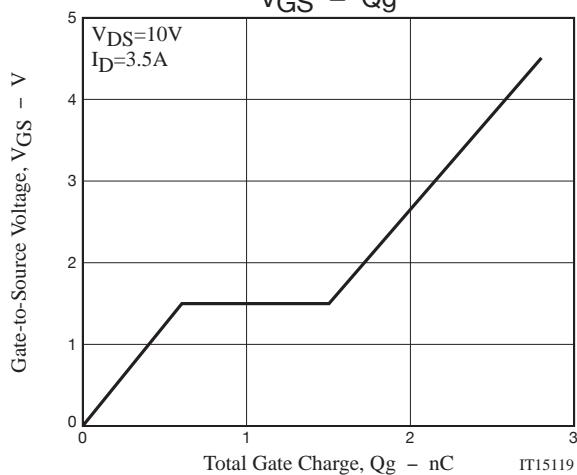
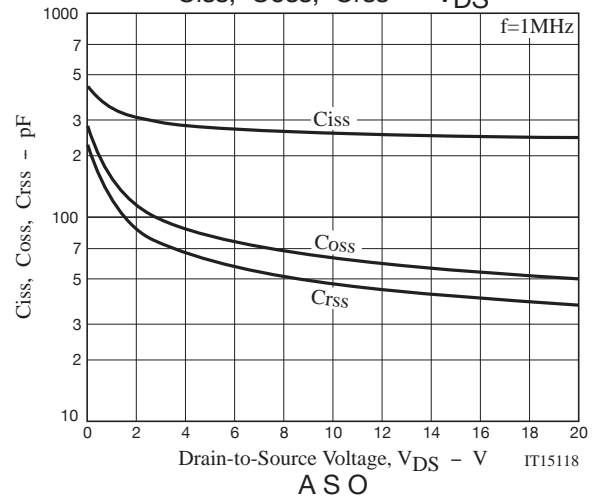
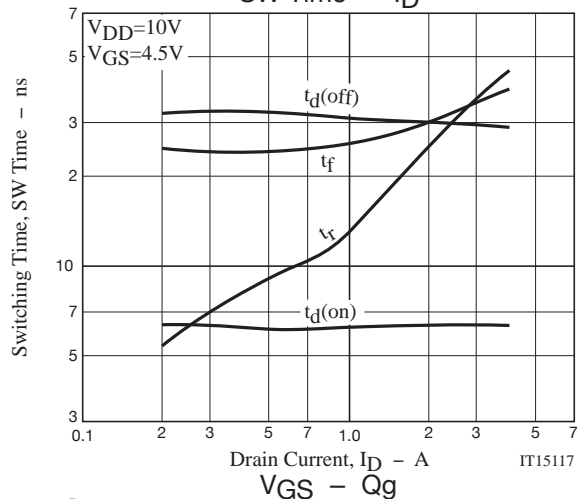
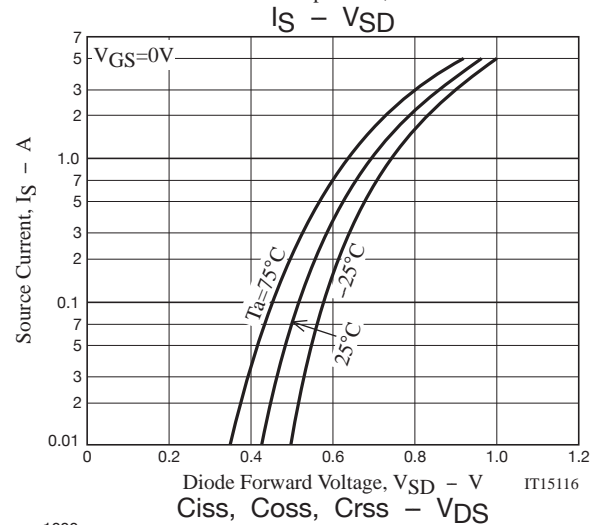
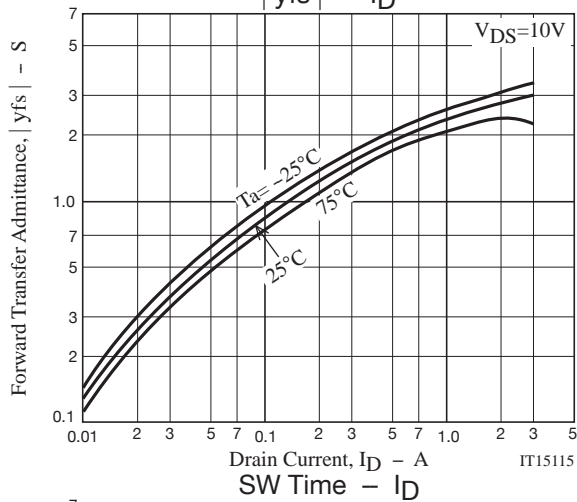
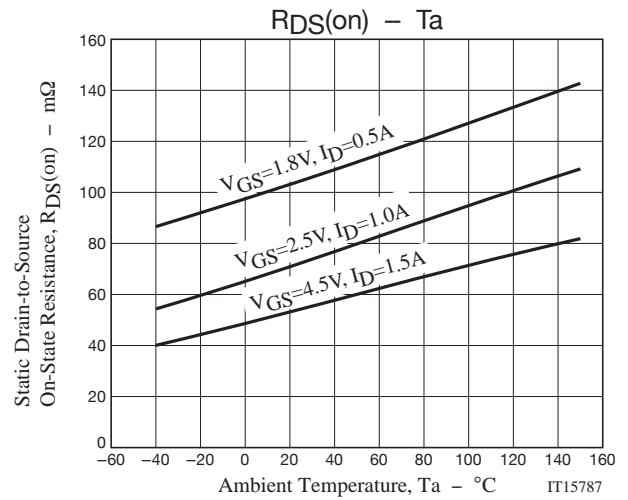
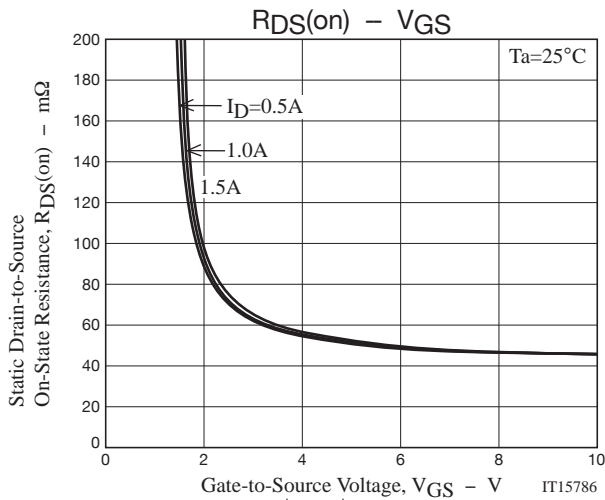
Electrical Characteristics at  $T_a=25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$ , $V_{GS}=0\text{V}$	20			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20\text{V}$ , $V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8\text{V}$ , $V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}$ , $I_D=1\text{mA}$	0.4		1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10\text{V}$ , $I_D=1.5\text{A}$		2.8		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=1.5\text{A}$ , $V_{GS}=4.5\text{V}$		54	71	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=1\text{A}$ , $V_{GS}=2.5\text{V}$		73	103	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=0.5\text{A}$ , $V_{GS}=1.8\text{V}$		104	156	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=10\text{V}$ , $f=1\text{MHz}$		260		pF
Output Capacitance	$C_{oss}$	$V_{DS}=10\text{V}$ , $f=1\text{MHz}$		65		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=10\text{V}$ , $f=1\text{MHz}$		50		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		6.2		ns
Rise Time	$t_r$	See specified Test Circuit.		19		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		30		ns
Fall Time	$t_f$	See specified Test Circuit.		28		ns
Total Gate Charge	$Q_g$	$V_{DS}=10\text{V}$ , $V_{GS}=4.5\text{V}$ , $I_D=3.5\text{A}$		2.8		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=10\text{V}$ , $V_{GS}=4.5\text{V}$ , $I_D=3.5\text{A}$		0.6		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=10\text{V}$ , $V_{GS}=4.5\text{V}$ , $I_D=3.5\text{A}$		0.9		nC
Diode Forward Voltage	$V_{SD}$	$I_S=3.5\text{A}$ , $V_{GS}=0\text{V}$		0.85	1.2	V

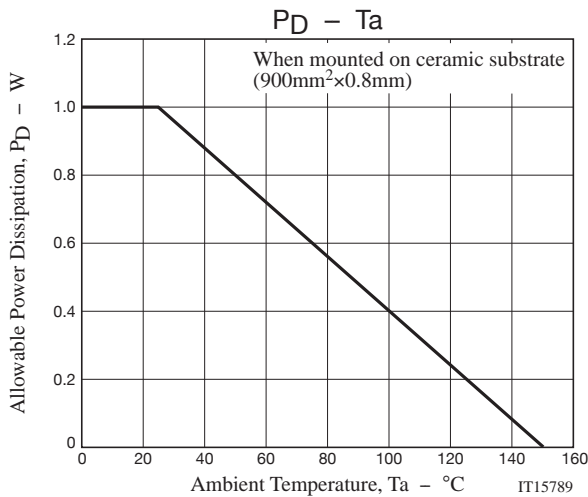
## Switching Time Test Circuit











Note on usage : Since the CPH3456 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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