

MCH6663

Power MOSFET

30V, 188mΩ, 1.8A, -30V, 325mΩ, -1.5A,
Complementary Dual



ON Semiconductor®

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Features

- ON-Resistance Nch : $R_{DS(on)1}=145m\Omega$ (typ)
Pch : $R_{DS(on)1}=250m\Omega$ (typ)
- 4V Drive
- Complementary N-Channel and P-Channel MOSFET
- Pb-Free, Halogen Free and RoHS Compliance

Specifications

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

Parameter	Symbol	N-channel	P-channel	Unit
Drain to Source Voltage	V_{DSS}	30	-30	V
Gate to Source Voltage	V_{GSS}	± 20	± 20	V
Drain Current (DC)	I_D	1.8	-1.5	A
Drain Current (Pulse) $PW \leq 10\mu s$, duty cycle $\leq 1\%$	I_{DP}	7.2	-6	A
Power Dissipation When mounted on ceramic substrate (900mm ² ×0.8mm) 1unit	P_D	0.8		W
Junction Temperature	T_J	150		°C
Storage Temperature	T_{stg}	-55 to +150		°C

This product is designed to "ESD immunity < 200V*", so please take care when handling.

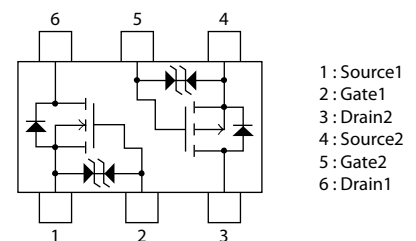
* Machine Model

Thermal Resistance Ratings

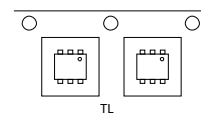
Parameter	Symbol	Value	Unit
Junction to Ambient When mounted on ceramic substrate (900mm ² ×0.8mm) 1unit	$R_{\theta JA}$	156.25	°C/W

V_{DSS}	$R_{DS(on)}$ Max	I_D Max
N-Ch 30V	188 mΩ@ 10V	1.8A
	343 mΩ@ 4.5V	
	378 mΩ@ 4V	
P-Ch -30V	325 mΩ@ -10V	-1.5A
	555 mΩ@ -4.5V	
	641 mΩ@ -4V	

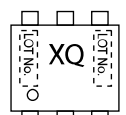
Electrical Connection N-Channel and P-Channel



Packing Type : TL



Marking



Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

ORDERING INFORMATION

See detailed ordering and shipping information on page 7 of this data sheet.

MCH6663

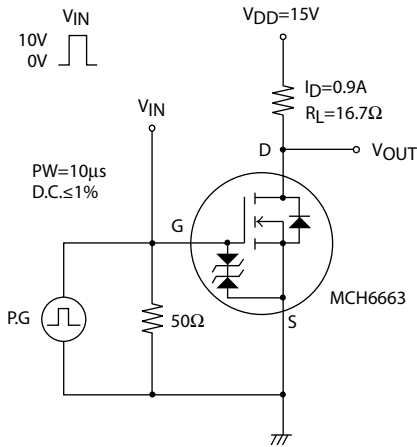
Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
[N-channel]						
Drain to Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	30			V
Zero-Gate Voltage Drain Current	IDSS	VDS=30V, VGS=0V			1	μA
Gate to Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Gate Threshold Voltage	VGS(th)	VDS=10V, ID=1mA	1.2		2.6	V
Forward Transconductance	gFS	VDS=10V, ID=0.9A		1.1		S
Static Drain to Source On-State Resistance	RDS(on)1	ID=0.9A, VGS=10V		145	188	mΩ
	RDS(on)2	ID=0.5A, VGS=4.5V		245	343	mΩ
	RDS(on)3	ID=0.5A, VGS=4V		270	378	mΩ
Input Capacitance	Ciss	VDS=10V, f=1MHz		88		pF
Output Capacitance	Coss			19		pF
Reverse Transfer Capacitance	Crss			11		pF
Turn-ON Delay Time	tD(on)	See specified Test Circuit		3.4		ns
Rise Time	tR			3.6		ns
Turn-OFF Delay Time	tD(off)			10.5		ns
Fall Time	tF			4.0		ns
Total Gate Charge	Qg	VDS=15V, VGS=10V, ID=1.8A		2.0		nC
Gate to Source Charge	Qgs			0.33		nC
Gate to Drain "Miller" Charge	Qgd			0.29		nC
Forward Diode Voltage	VSD	IS=1.8A, VGS=0V		0.86	1.2	V
[P-channel]						
Drain to Source Breakdown Voltage	V(BR)DSS	ID=−1mA, VGS=0V	−30			V
Zero-Gate Voltage Drain Current	IDSS	VDS=−30V, VGS=0V			−1	μA
Gate to Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Gate Threshold Voltage	VGS(th)	VDS=−10V, ID=−1mA	−1.2		−2.6	V
Forward Transconductance	gFS	VDS=−10V, ID=−0.8A		1.3		S
Static Drain to Source On-State Resistance	RDS(on)1	ID=−0.8A, VGS=−10V		250	325	mΩ
	RDS(on)2	ID=−0.4A, VGS=−4.5V		397	555	mΩ
	RDS(on)3	ID=−0.4A, VGS=−4V		458	641	mΩ
Input Capacitance	Ciss	VDS=−10V, f=1MHz		82		pF
Output Capacitance	Coss			22		pF
Reverse Transfer Capacitance	Crss			16		pF
Turn-ON Delay Time	tD(on)	See specified Test Circuit		4.0		ns
Rise Time	tR			3.3		ns
Turn-OFF Delay Time	tD(off)			12		ns
Fall Time	tF			5.4		ns
Total Gate Charge	Qg	VDS=−15V, VGS=−10V, ID=−1.5A		2.2		nC
Gate to Source Charge	Qgs			0.36		nC
Gate to Drain "Miller" Charge	Qgd			0.49		nC
Forward Diode Voltage	VSD	IS=−1.5A, VGS=0V		−0.9	−1.5	V

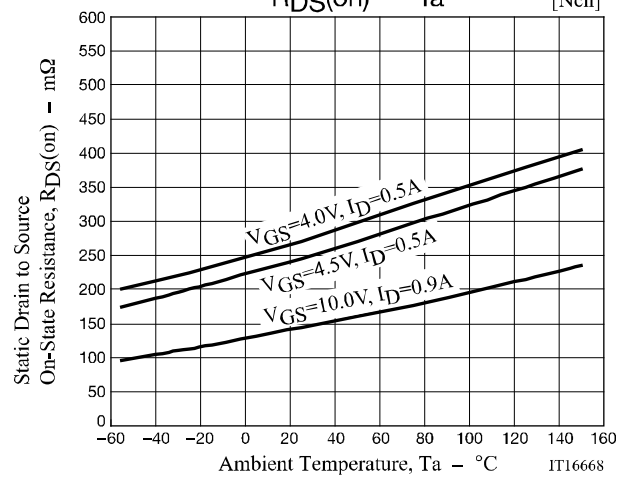
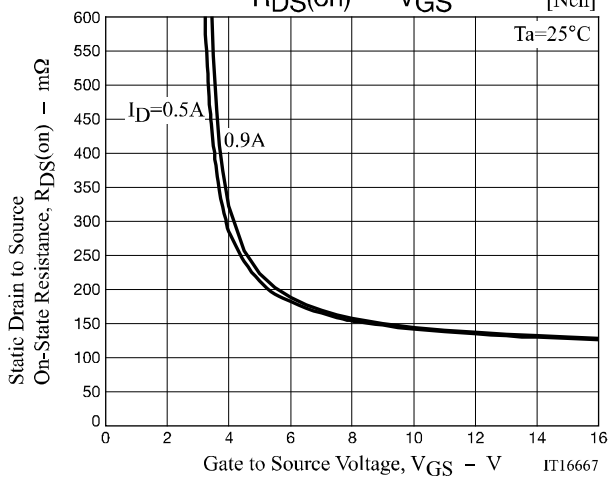
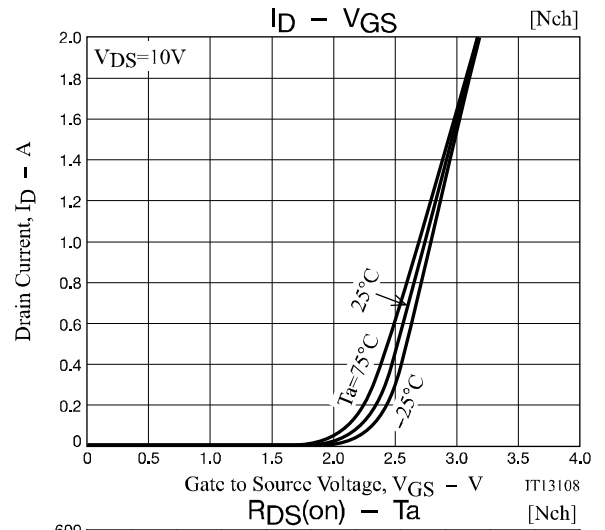
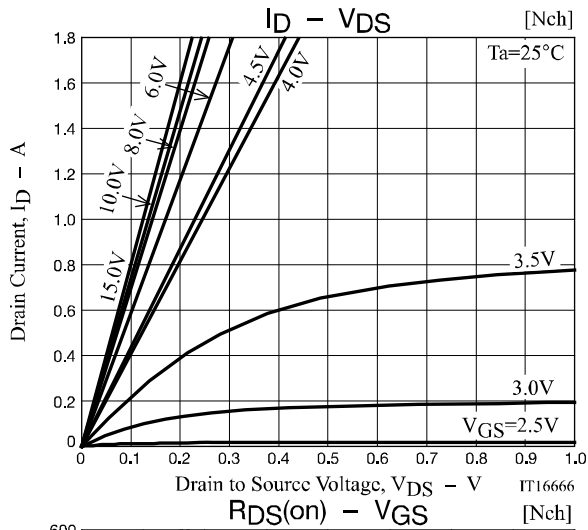
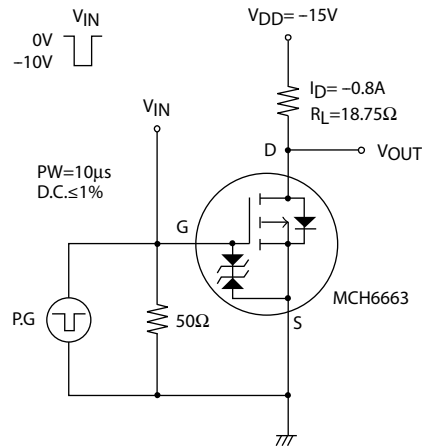
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

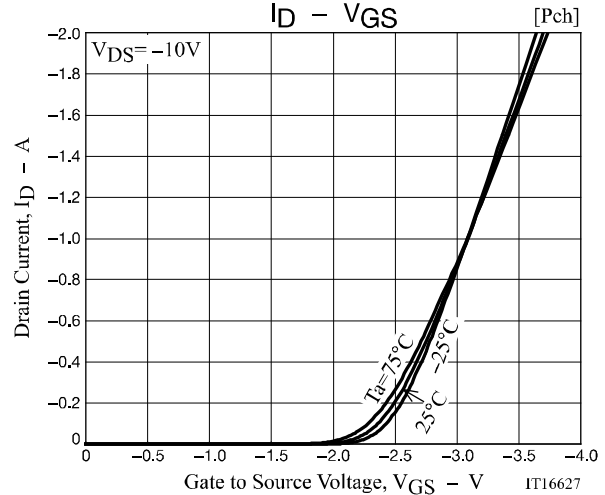
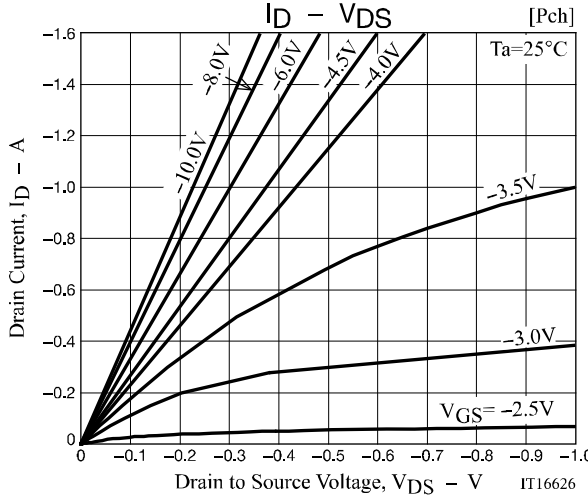
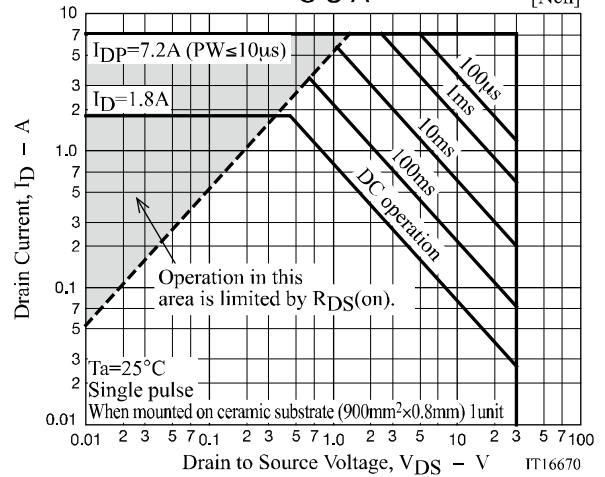
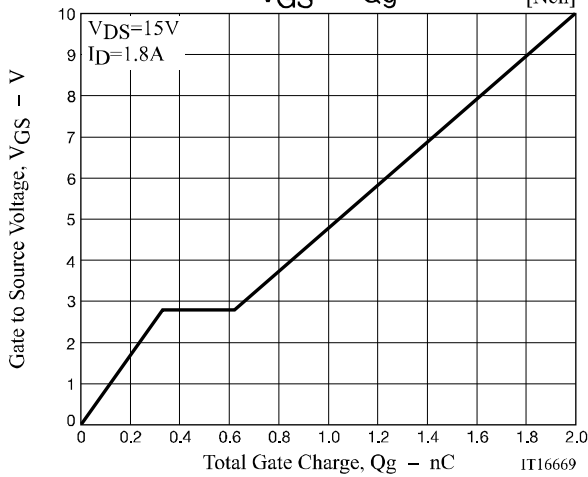
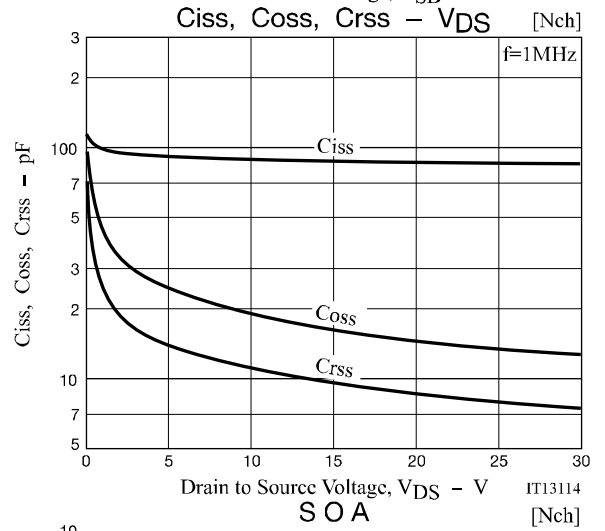
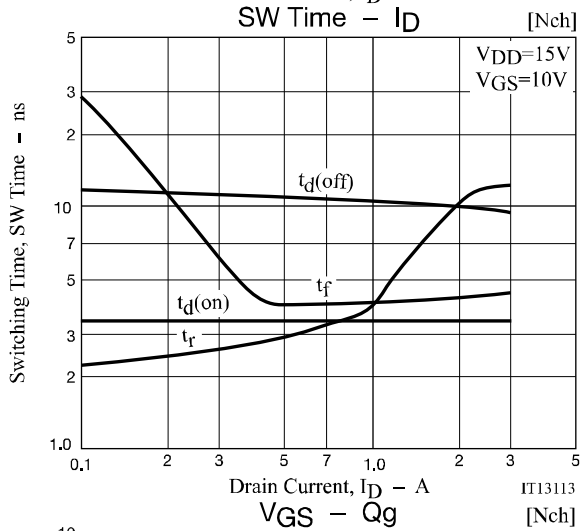
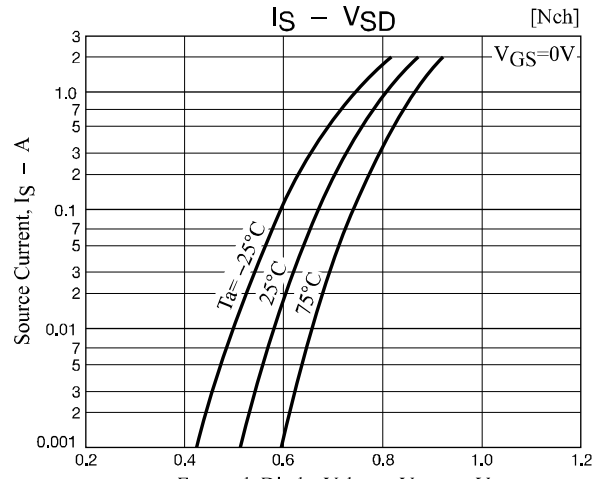
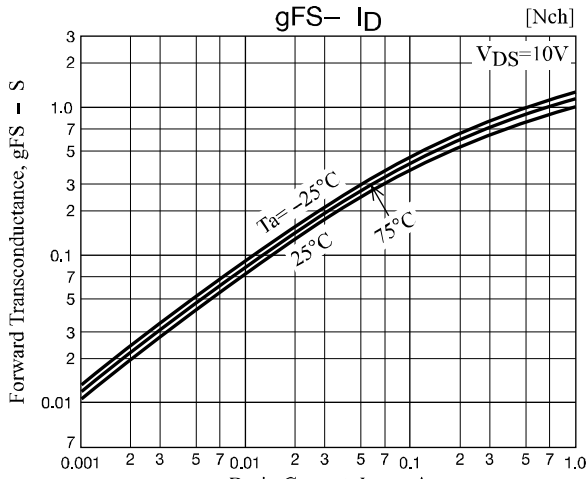
Switching Time Test Circuit

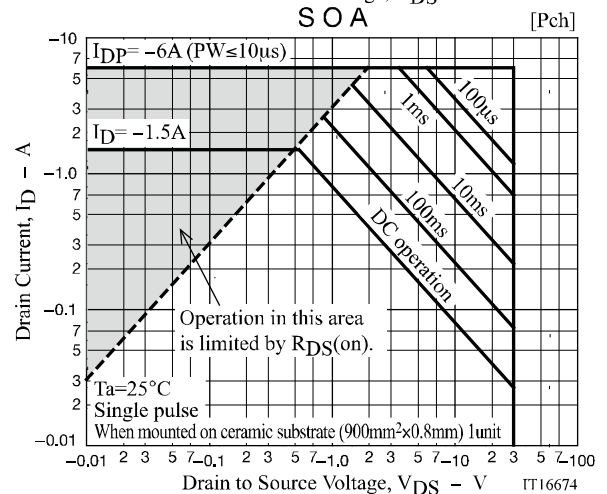
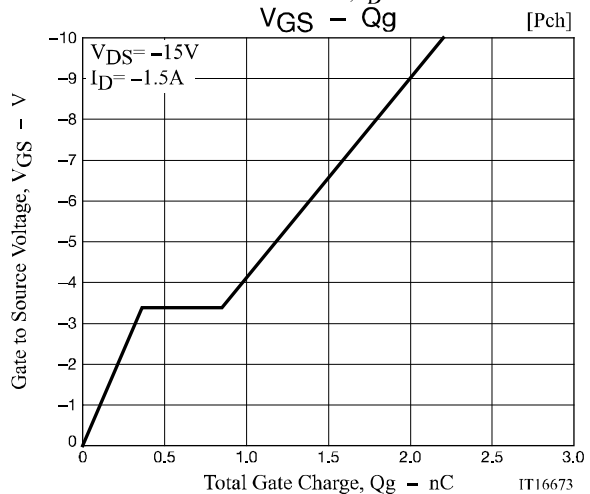
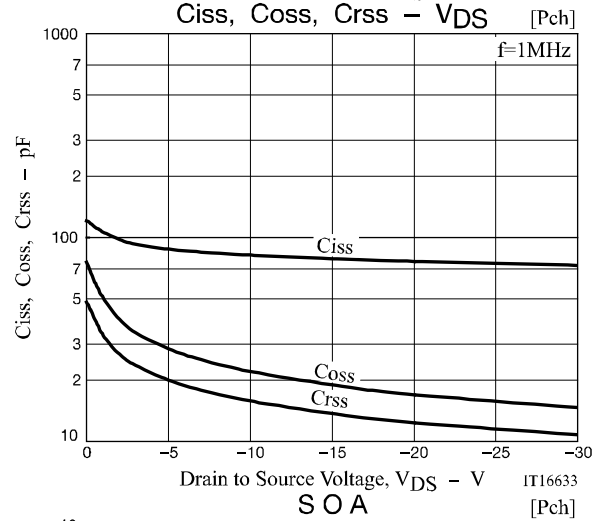
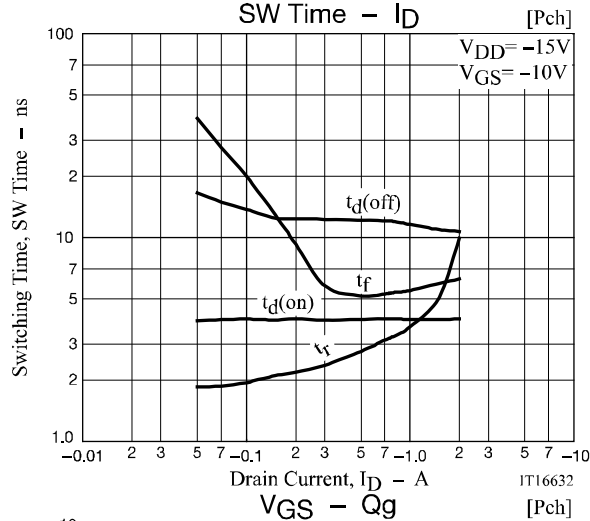
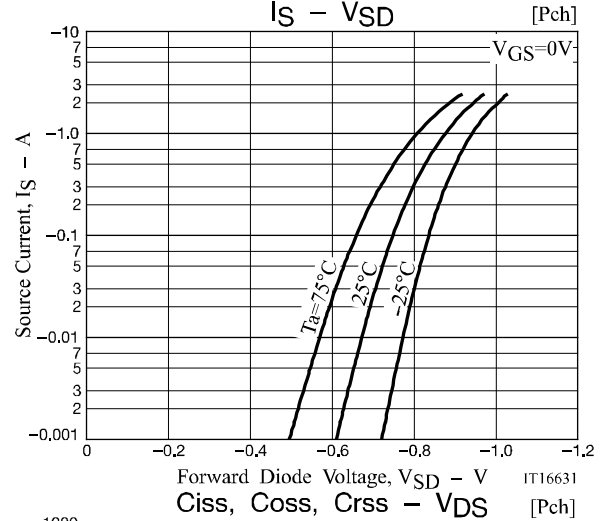
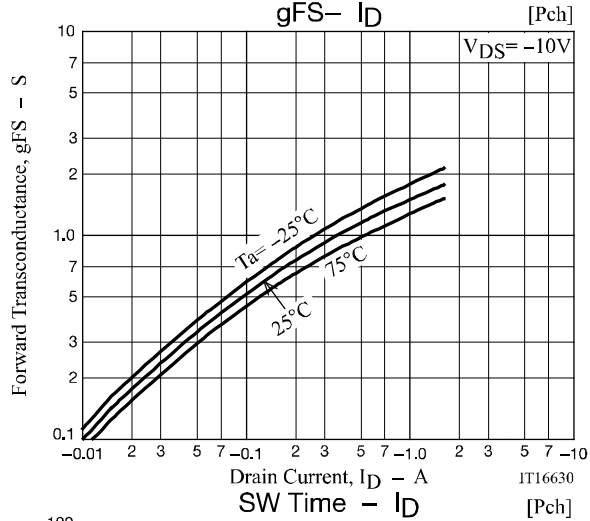
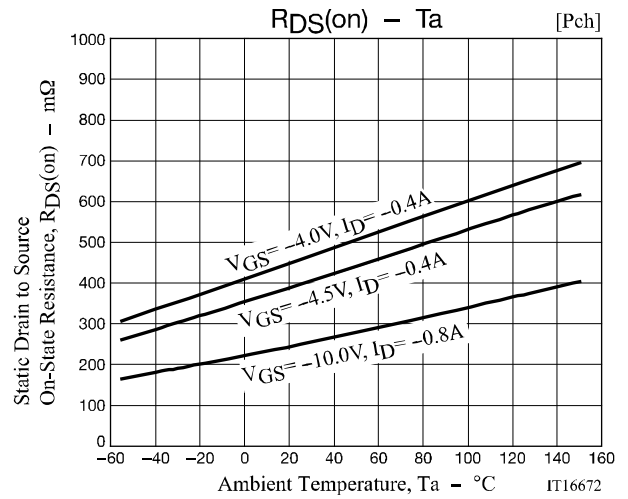
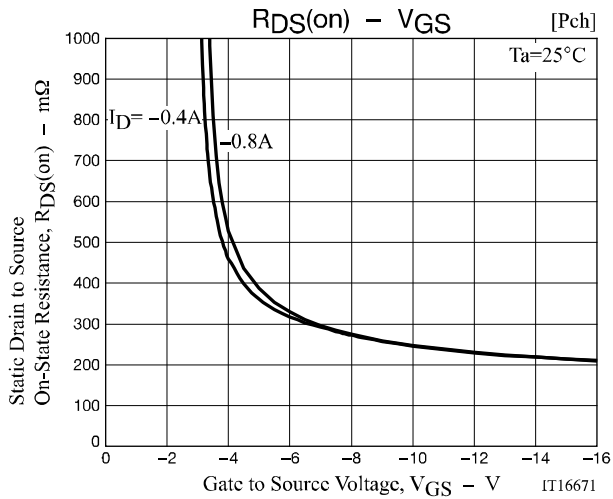
[N-channel]



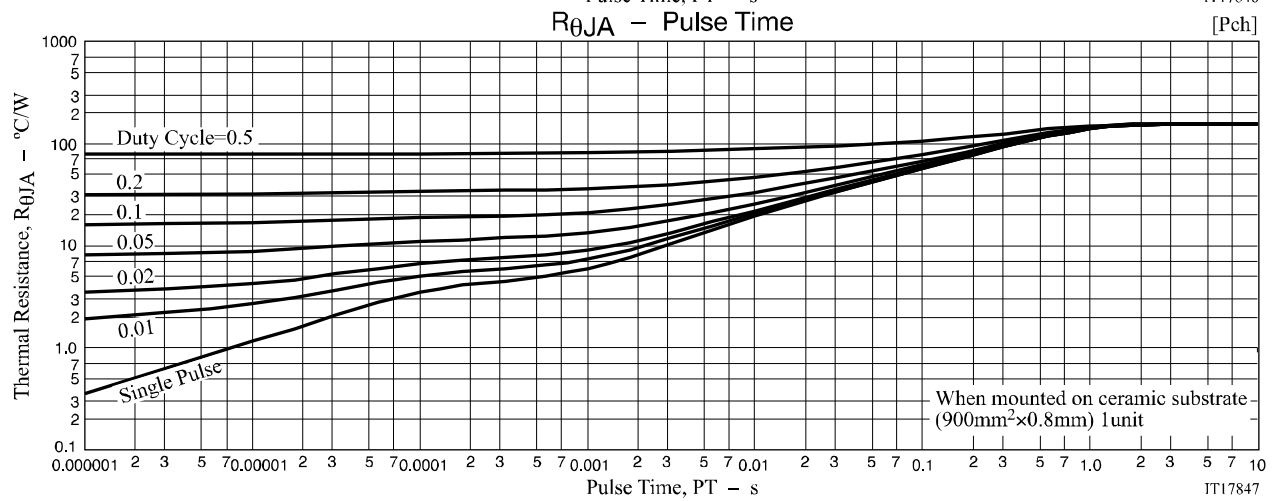
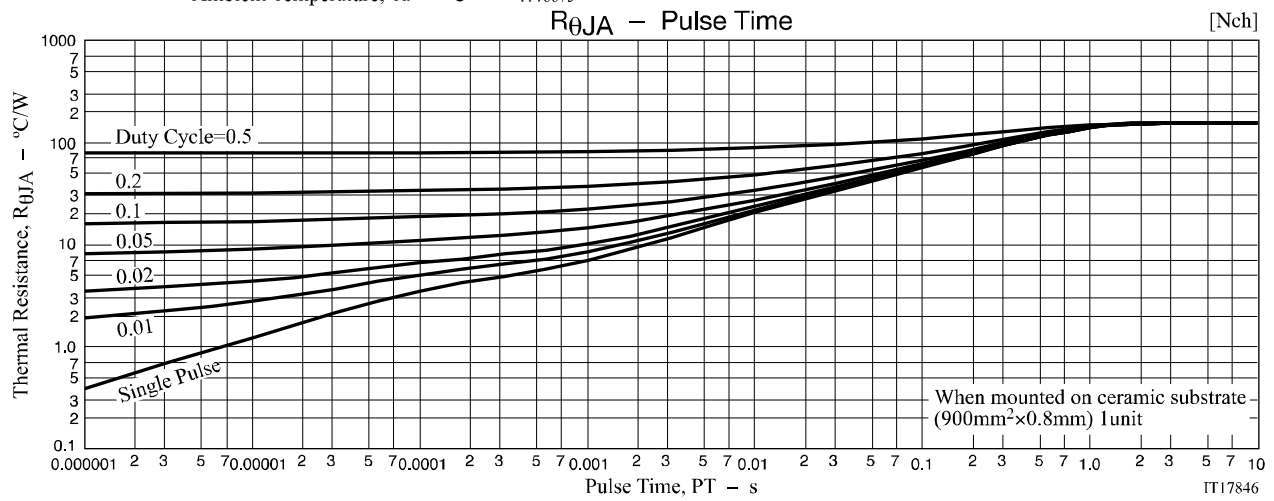
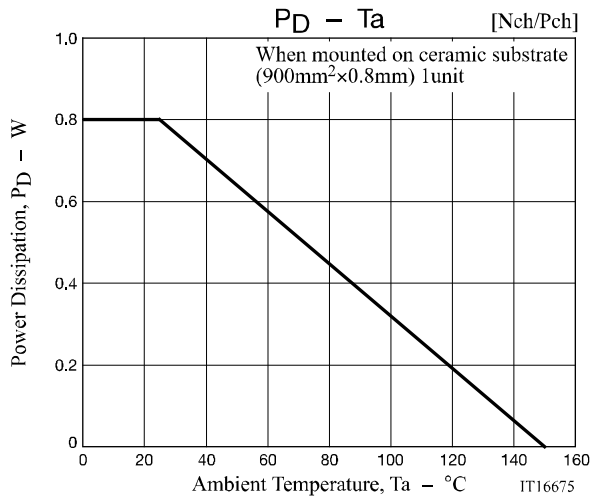
[P-channel]







MCH6663



Package Dimensions

MCH6663-TL-H / MCH6663-TL-W

MCPH6

CASE 419AS

ISSUE O

unit : mm

1 : Source1

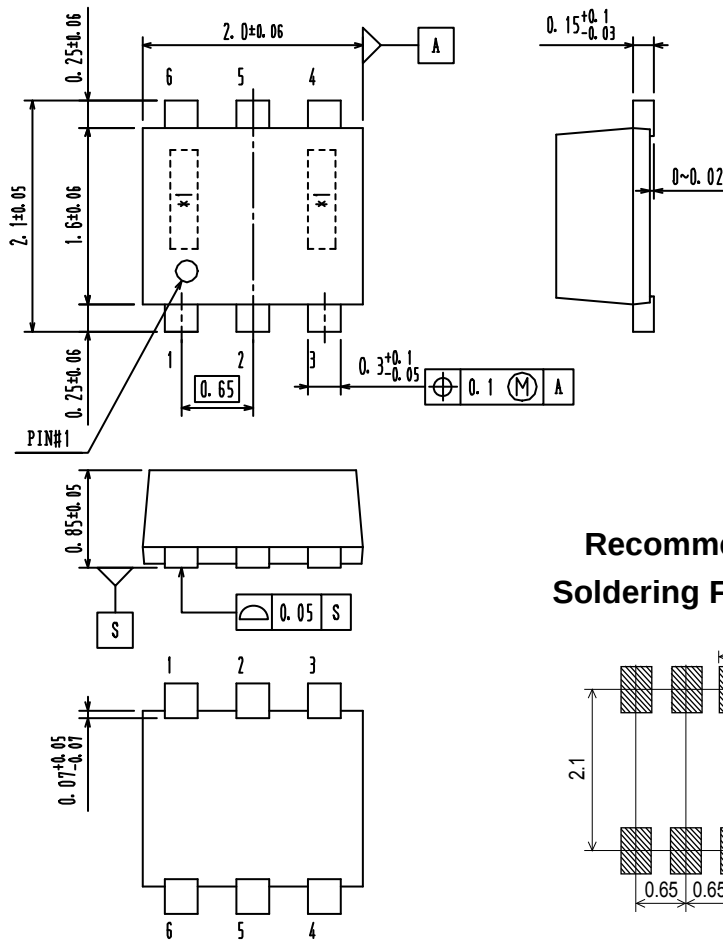
2 : Gate1

3 : Drain2

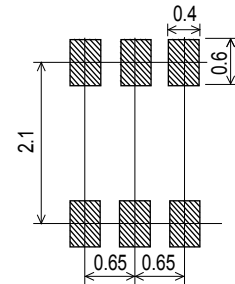
4 : Source2

5 : Gate 2

6 : Drain1



Recommended Soldering Footprint



ORDERING INFORMATION

Device	Package	Shipping	Note
MCH6663-TL-H	MCPH6 SC-88, SC-70-6, SOT-363	3,000 pcs. / Tape & Reel	Pb-Free and Halogen Free
MCH6663-TL-W			

Note on usage : Since the MCH6663 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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