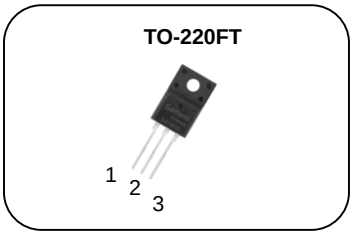
Samwin®

SW7N65D

N-channel Enhanced mode TO-220FTN MOSFET

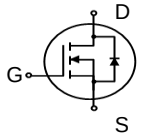
Features

- High ruggedness
- Low $R_{DS(ON)}$ (Typ 1.1Ω)@V_{GS}=10V
- Low Gate Charge (Typ 30nC)
- Improved dv/dt Capability
- 100% Avalanche Tested
- Application:Charger,LED,PC Power



1. Gate 2. Drain 3. Source

BV_{DSS} : 650V
I_D : 7A
$R_{DS(ON)}$: 1.1Ω



LEAD-FREE RoHS

General Description

This power MOSFET is produced with advanced technology of SAMWIN.
This technology enable the power MOSFET to have better characteristics, including fast switching time, low on resistance, low gate charge and especially excellent avalanche characteristics.

Order Codes

Item	Sales Type	Marking	Package	Packaging
1	SW YN 7N65D	SW7N65D	TO-220FTN	TUBE

Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{DSS}	Drain to source voltage	650	V
I_D	Continuous drain current (@T_C=25°C)	7*	A
	Continuous drain current (@T_C=100°C)	4.4*	A
I_{DM}	Drain current pulsed (note 1)	28	A
V_{GS}	Gate to source voltage	±30	V
E_{AS}	Single pulsed avalanche energy (note 2)	430	mJ
E_{AR}	Repetitive avalanche energy (note 1)	40	mJ
dv/dt	Peak diode recovery dv/dt (note 3)	5	V/ns
P_D	Total power dissipation (@T_C=25°C)	27.8	W
	Derating factor above 25°C	0.22	W/°C
T_{STG}, T_J	Operating junction temperature & storage temperature	-55 ~ + 150	°C
T_L	Maximum lead temperature for soldering purpose, 1/8 from case for 5 seconds.	300	°C

*. Drain current is limited by junction temperature.

Thermal characteristics

Symbol	Parameter	Value	Unit
R_{thjc}	Thermal resistance, Junction to case	4.5	°C/W
R_{thja}	Thermal resistance, Junction to ambient	50	°C/W

Electrical characteristic (T_J= 25ºC unless otherwise specified)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
Off characteristics						
BV_{DSS}	Drain to source breakdown voltage	V_{GS}=0V, I_D=250uA	650			V
ΔBV_{DSS} / ΔT_J	Breakdown voltage temperature coefficient	I_D=250uA, referenced to 25ºC		0.51		V/ºC
I_{DSS}	Drain to source leakage current	V_{DS}=650V, V_{GS}=0V			1	uA
		V_{DS}=520V, T_J=125ºC			50	uA
I_{GSS}	Gate to source leakage current, forward	V_{GS}=30V, V_{DS}=0V			100	nA
	Gate to source leakage current, reverse	V_{GS}=-30V, V_{DS}=0V			-100	nA
On characteristics						
$V_{GS(TH)}$	Gate threshold voltage	V_{DS}=V_{GS}, I_D=250uA	2.5		4.5	V
$R_{DS(ON)}$	Drain to source on state resistance	V_{GS}=10V, I_D = 3.5A, T_J=25ºC		1.1	1.4	Ω
		V_{GS}=10V, I_D = 3.5A, T_J=125ºC		2.4		Ω
G_{fs}	Forward transconductance	V_{DS}=30 V, I_D =3.5A		6.3		S
Dynamic characteristics						
C_{iss}	Input capacitance	V_{GS}=0V, V_{DS}=25V, f=1MHz		1230		pF
C_{oss}	Output capacitance			108		
C_{rss}	Reverse transfer capacitance			16		
$t_{d(on)}$	Turn on delay time	V_{DS}=350V, I_D=7A, R_G=25Ω (note 4,5)		16		ns
t_r	Rising time			36		
$t_{d(off)}$	Turn off delay time			83		
t_f	Fall time			40		
Q_g	Total gate charge	V_{DS}=520V, V_{GS}=10V, I_D=7A (note 4,5)		30		nC
Q_{gs}	Gate-source charge			5		
Q_{gd}	Gate-drain charge			15		
R_g	Gate resistance	V_{DS}=0V, Scan F mode		1.7		Ω

Source to drain diode ratings characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_S	Continuous source current	Integral reverse p-n Junction diode in the MOSFET			7	A
I_{SM}	Pulsed source current				28	A
V_{SD}	Diode forward voltage drop.	I_S=7A, V_{GS}=0V			1.4	V
t_{rr}	Reverse recovery time	I_S=7A, V_{GS}=0V, dI_F/dt=100A/us		436		ns
Q_{rr}	Reverse recovery charge			3.6		uC

※. Notes

1. Repeatitive rating : pulse width limited by junction temperature.
2. L = 17.5mH, I_{AS} = 7A, V_{DD} = 50V, R_G=25Ω, Starting T_J = 25ºC
3. I_{SD} ≤ 7A, di/dt = 100A/us, V_{DD} ≤ BV_{DSS}, Staring T_J =25ºC
4. Pulse Test : Pulse Width ≤ 300us, duty cycle ≤ 2%.
5. Essentially independent of operating temperature.

Fig. 1. On-state characteristics

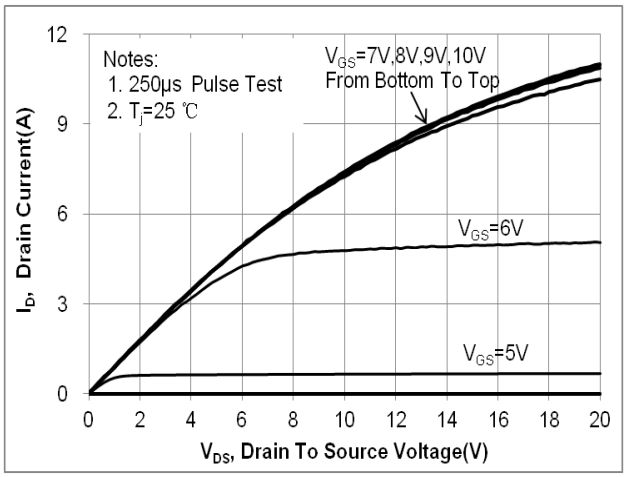


Fig. 2. Transfer Characteristics

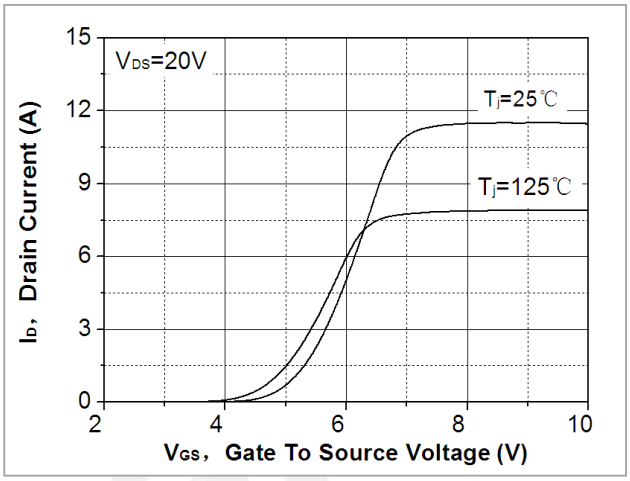


Fig. 3. On-resistance variation vs. drain current and gate voltage

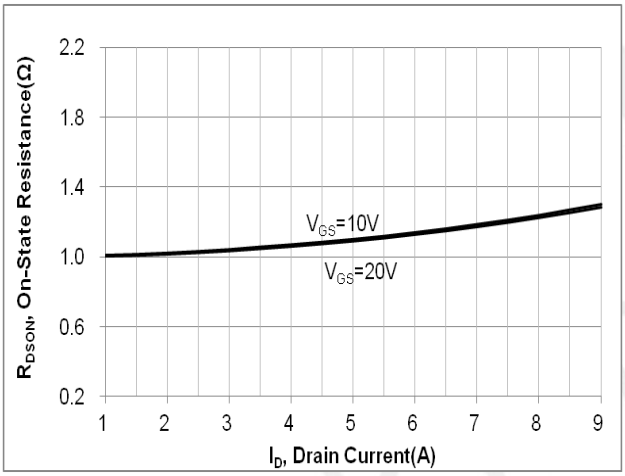


Fig. 4. On-state current vs. diode forward voltage

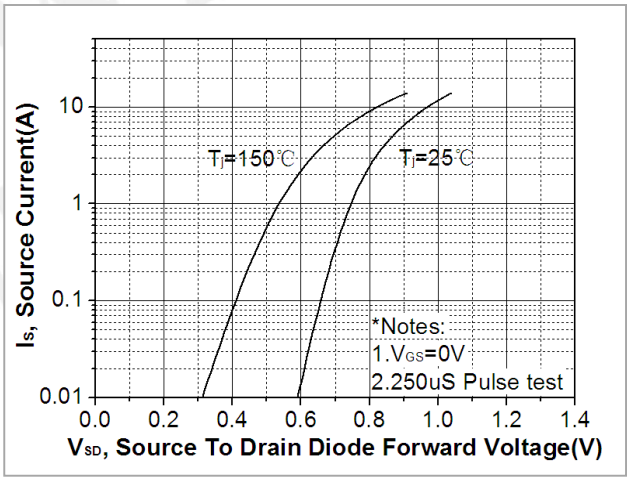


Fig 5. Breakdown Voltage Variation vs. Junction Temperature

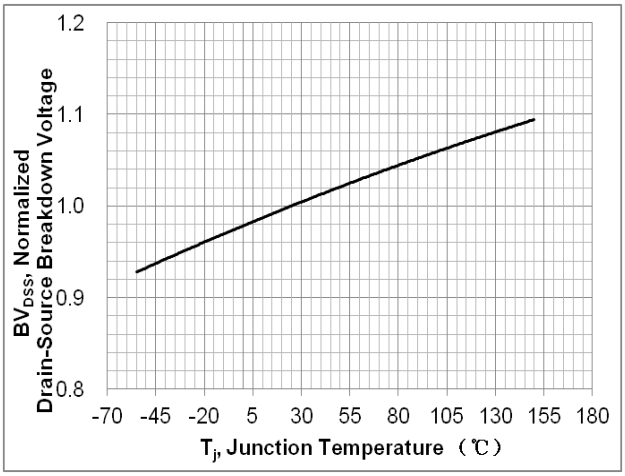


Fig. 6. On resistance variation vs. junction temperature

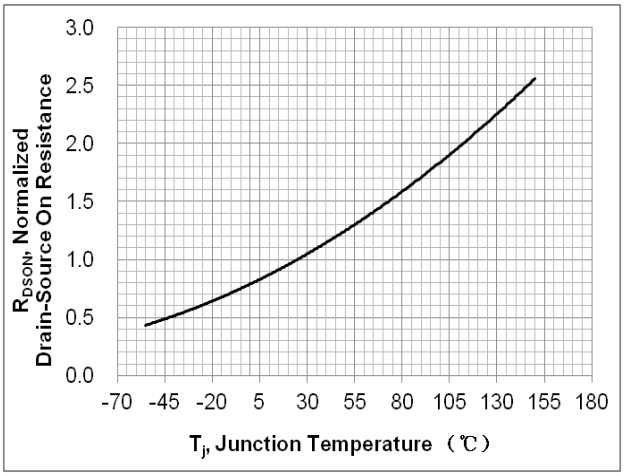


Fig. 7. Gate charge characteristics

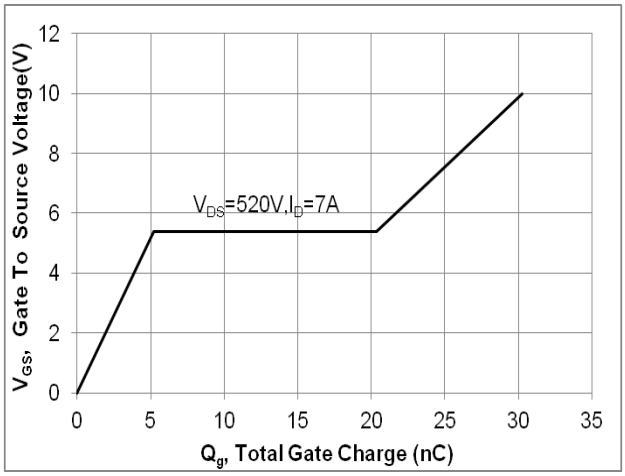


Fig. 8. Capacitance Characteristics

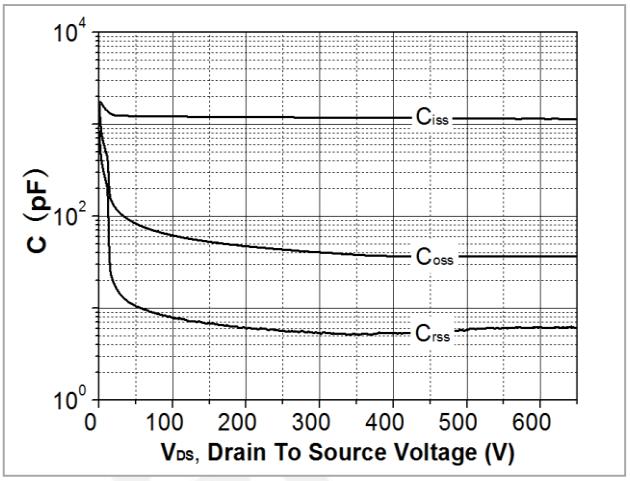


Fig. 9. Maximum safe operating area

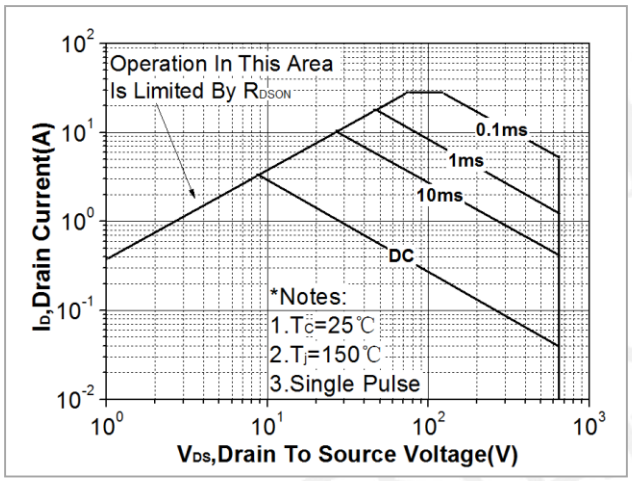


Fig. 10. Transient thermal response curve

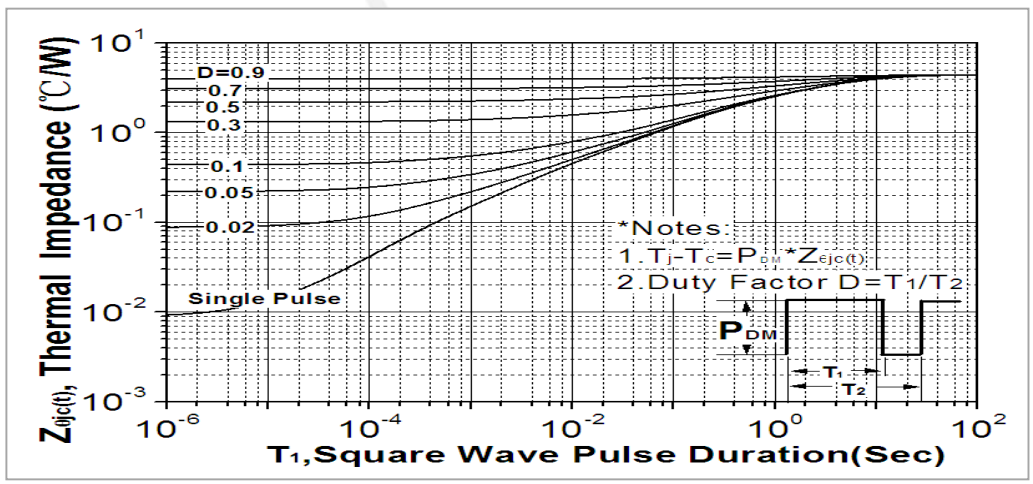


Fig. 11. Gate charge test circuit & waveform

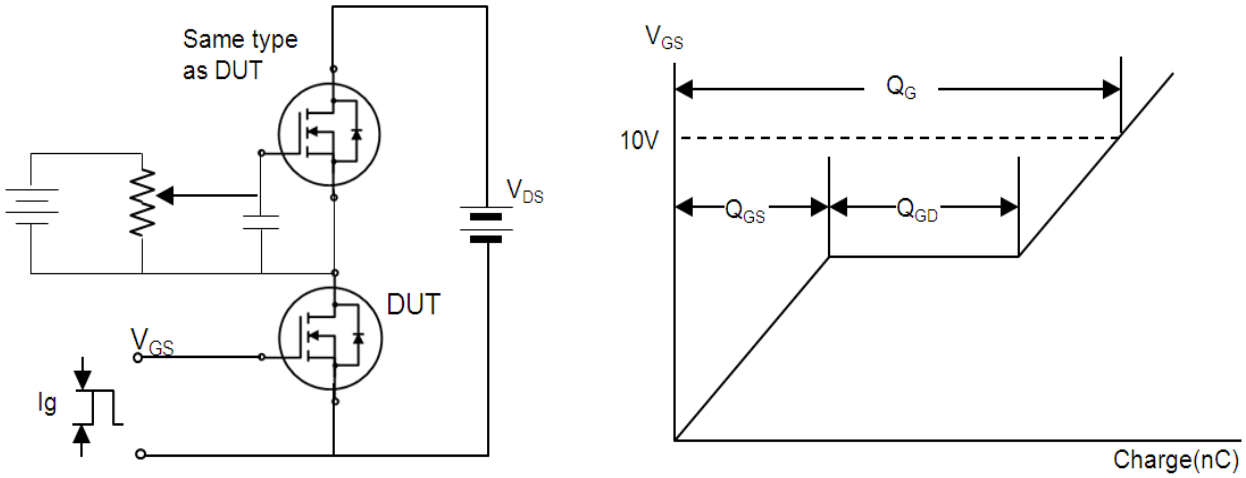


Fig. 12. Switching time test circuit & waveform

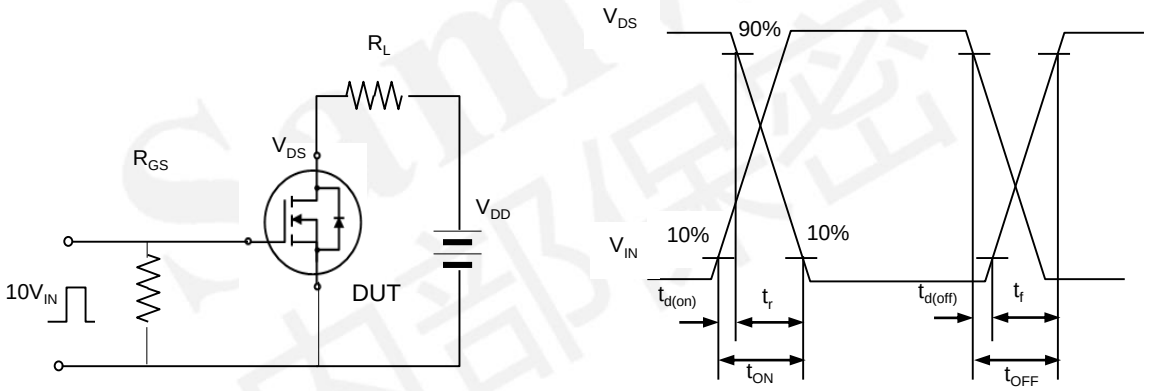


Fig. 13. Unclamped Inductive switching test circuit & waveform

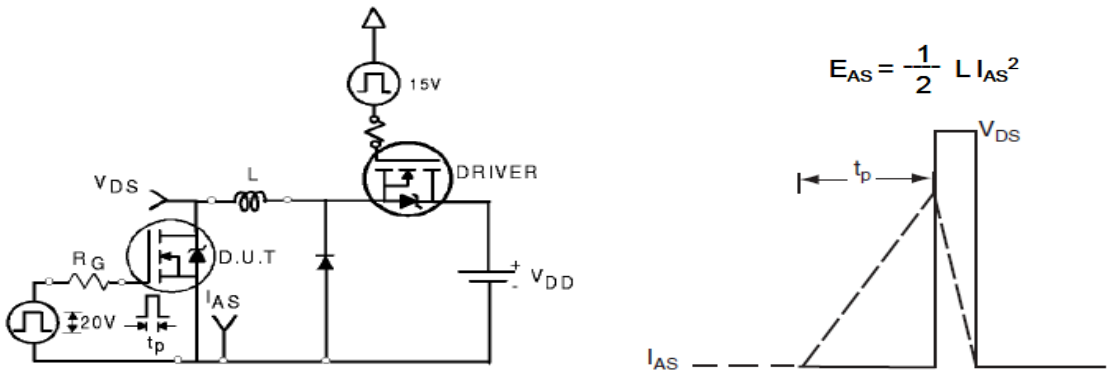
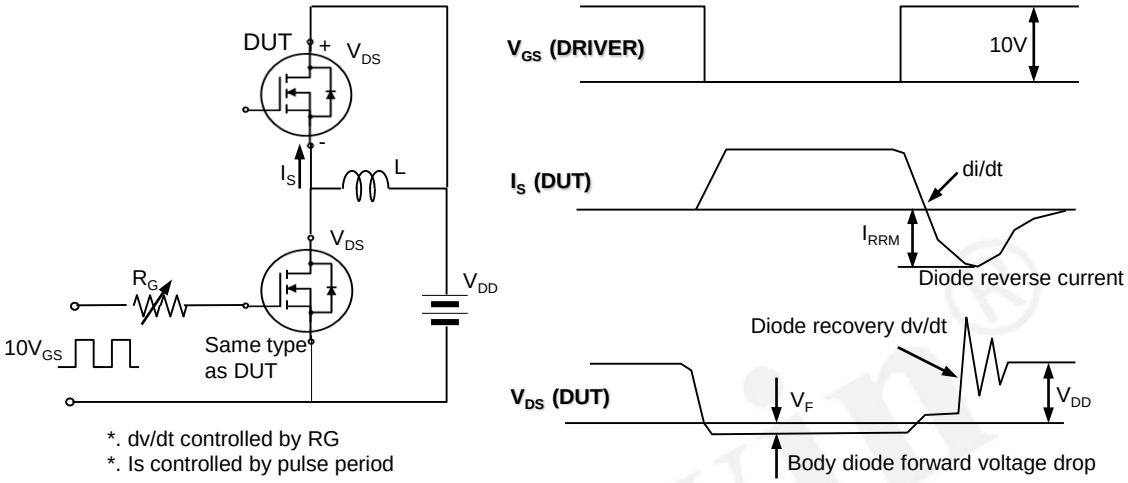


Fig. 14. Peak diode recovery dv/dt test circuit & waveform



DISCLAIMER

* All the data & curve in this document was tested in XI'AN SEMIPOWER TESTING & APPLICATION CENTER.
* This product has passed the PCT,TC,HTRB,HTGB,HAST,PC and Solderdunk reliability testing.
* Qualification standards can also be found on the Web site (**http://www.semipower.com.cn**)
* Suggestions for improvement are appreciated, Please send your suggestions to **samwin@samwinsemi.com**

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for MOSFET ***category:***

Click to view products by Sam&wing ***manufacturer:***

Other Similar products are found below :

IRFD120 JANTX2N5237 2SK2267(Q) BUK455-60A/B TK100A10N1,S4X(S MIC4420CM-TR VN1206L NDP4060 SI4482DY IRS2092STRPBF-EL IPS70R2K0CEAKMA1 TK31J60W5,S1VQ(O TK31J60W,S1VQ(O TK16J60W,S1VQ(O 2SK2614(TE16L1,Q) DMN1017UCP3-7 EFC2J004NUZTDG P85W28HP2F-7071 DMN1053UCP4-7 NTE2384 DMC2700UDMQ-7 DMN2080UCB4-7 DMN61D9UWQ-13 US6M2GTR DMN31D5UDJ-7 DMP22D4UFO-7B IPS60R3K4CEAKMA1 DMN1006UCA6-7 DMN16M9UCA6-7 STF5N65M6 IRF40H233XTMA1 STU5N65M6 DMN6022SSD-13 DMN13M9UCA6-7 DMTH10H4M6SPS-13 IPS60R360PFD7SAKMA1 DMN2990UFB-7B SSM3K35CT,L3F IPLK60R1K0PFD7ATMA1 2N7002W-G MCAC30N06Y-TP IPWS65R035CFD7AXKSA1 MCQ7328-TP SSM3J143TU,LXHF DMN12M3UCA6-7 PJMF280N65E1_T0_00201 PJMF380N65E1_T0_00201 PJMF280N60E1_T0_00201 PJMF600N65E1_T0_00201 PJMF900N65E1_T0_00201