

**SuperMOS – TO-252 -30V  $BV_{DSS}$ ,  $8m\Omega$   $R_{DS(ON)}$ , -62A  $I_D$  P-channel MOSFET**

**1. Description**

The AOD403 is P-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge. Device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product AOD403 is Pb-free.

**2. Features**

- -30V,  $R_{DS(ON)}=8m\Omega$ ,  $V_{GS}=-10V$
- $R_{DS(ON)}=11.5m\Omega$ ,  $V_{GS}=-4.5V$
- Fast Switching
- High density cell design for low  $R_{DS(on)}$
- Material : Halogen free
- Reliable and rugged
- Avalanche Rated
- Low leakage current

**3. Applications**

- PWM applications **100% UIS TESTED!**
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

**4. Ordering Information**

Part Number	Package	Marking	Material	Quantity per reel	Flammability Rating
AOD403	TO-252	ESD403/lot	Halogen free	2,500 PCS	UL 94V-0

Table-1 Ordering information

**5. Pin Configuration and Functions**

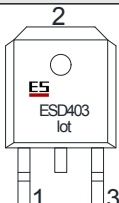
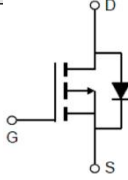
Pin	Function	Outline	Circuit Diagram
1	Gate		
3	Source		
2	Drain		

Table-2 Pin configuration

## 6. Specification

### Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	$BV_{DSS}$	-30	V	
Gate-Source Voltage	$V_{GS}$	±25	V	
Continuous Drain Current <sup>a</sup>	$I_D$	$T_C=25^{\circ}C$	-62	A
		$T_C=75^{\circ}C$	-48	
Maximum Power Dissipation <sup>a</sup>	$P_D$	$T_C=25^{\circ}C$	79	W
		$T_C=75^{\circ}C$	47	
Pulsed Drain Current <sup>b</sup>	$I_{DM}$	-200	A	
Avalanche Current, Single Pulsed <sup>c</sup>	$I_{AS}$	24	A	
Avalanche Energy, Single Pulsed <sup>c</sup>	$E_{AS}$	86.4	mJ	
Operating Junction Temperature	$T_J$	150	°C	
Storage Temperature Range	$T_{stg}$	-55 to +150	°C	

#### Thermal resistance ratings

Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance <sup>a</sup>	$t \leq 10$ s	$R_{\theta JA}$	16	20	°C/W
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	0.9	1.6	

Note:

a: Surface mounted on FR4 Board using 1 square inch pad size, 1oz copper

b: Repetitive rating, pulse width limited by junction temperature,  $t_p=10\mu s$ , Duty Cycle=1%

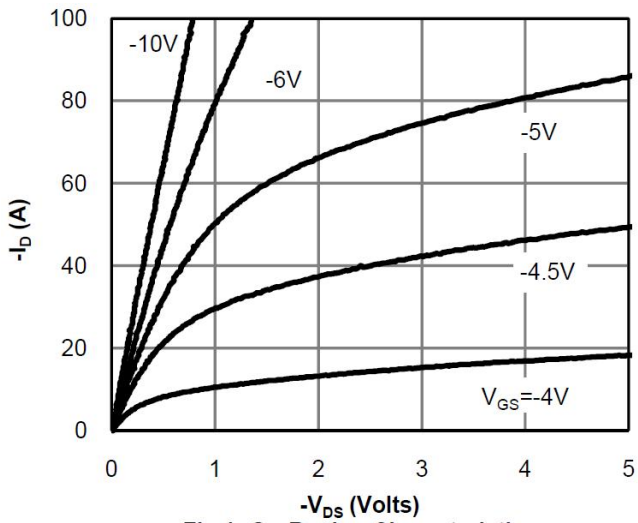
c: EAS condition:  $T_J=25^{\circ}C$ ,  $V_{DD}=-30V$ ,  $V_G=-10V$ ,  $L=0.3mH$ ,  $R_g=25\Omega$

## Electrical Characteristics

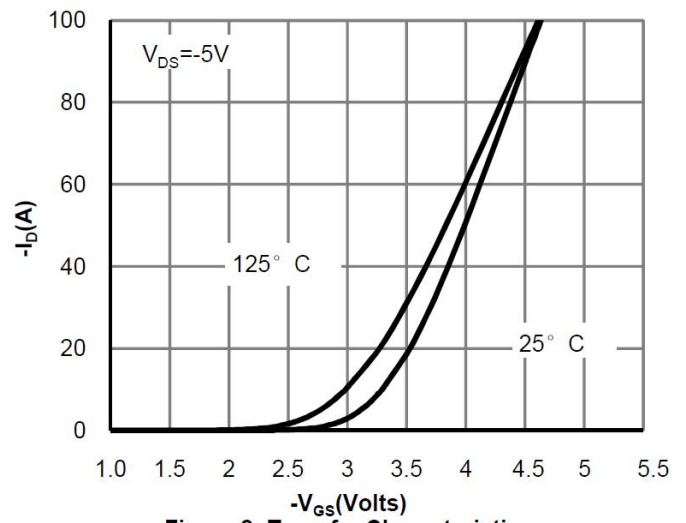
At TA = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-to-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$			-1	$\mu A$
Gate-to-source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 25V$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1	-1.5	-2	V
Drain-to-source On-resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-20A$		8	12	m $\Omega$
		$V_{GS}=-4.5V, I_D=-20A$		11.5	18	
Forward Trans conductance	$g_{FS}$	$V_{DS}=-5.0V, I_D=-20A$			80	S
<b>CHARGES, CAPACITANCES AND GATE RESISTANCE</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0V, f=1MHz,$ $V_{DS}=15V$		2890	3500	pF
Output Capacitance	$C_{OSS}$			585	760	
Reverse Transfer Capacitance	$C_{RSS}$			470	660	
Gate Resistance	$R_g$	$f=1MHz$		3.8	5.7	$\Omega$
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS}=-10V, V_{DS}=-15V,$ $I_D=-20A$		51	61	nC
Gate-to-Source Charge	$Q_{GS}$			12	14	
Gate-to-Drain Charge	$Q_{GD}$			16	22	
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Delay Time	$t_{d(ON)}$	$V_{GS}=-10V, V_{DS}=-15V,$ $R_L=1\Omega, R_G=3\Omega$		16		ns
Rise Time	$t_r$			12		
Turn-Off Delay Time	$t_{d(OFF)}$			45		
Fall Time	$t_f$			22		
<b>BODY DIODE CHARACTERISTICS</b>						
Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-1.0A$		-0.7	-1	V

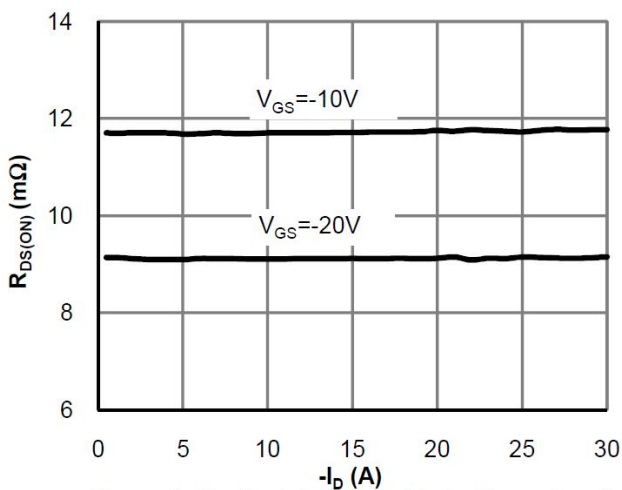
**7. Typical Characteristic**



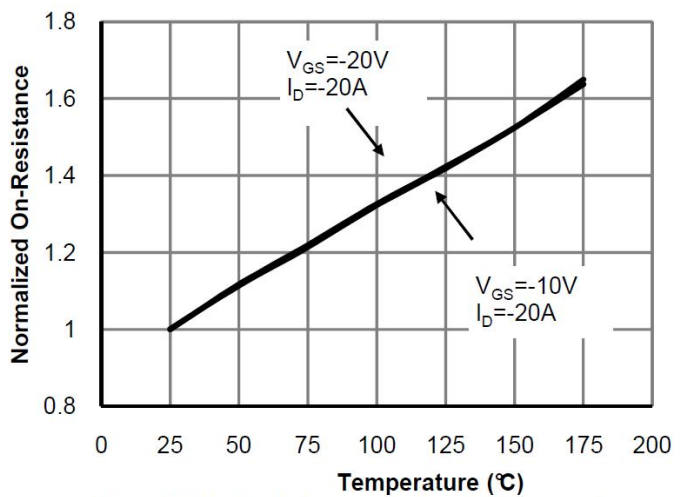
**Fig 1: On-Region Characteristics**



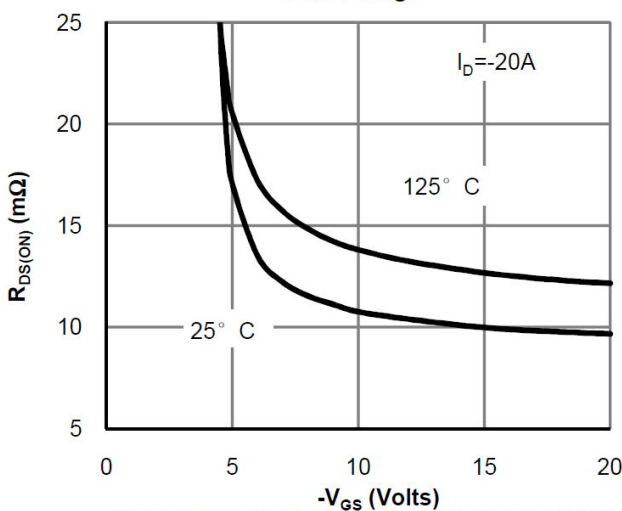
**Figure 2: Transfer Characteristics**



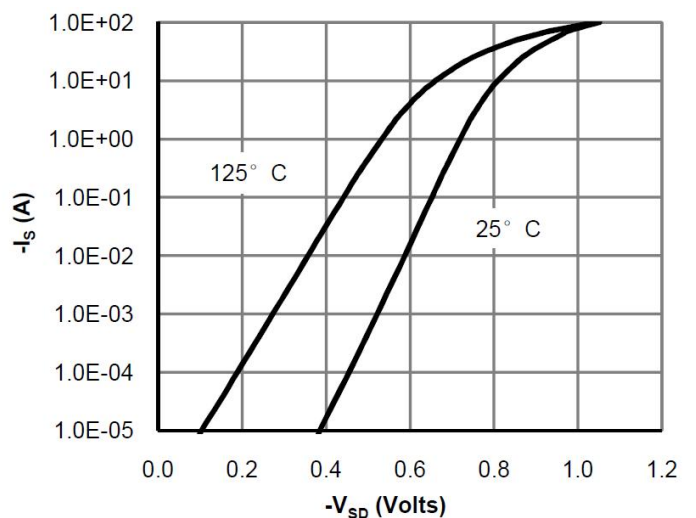
**Figure 3: On-Resistance vs. Drain Current and Gate voltage**



**Figure 4: On-Resistance vs. Junction Temperature**



**Figure 5: On-Resistance vs. Gate-Source Voltage**



**Figure 6: Body-Diode Characteristics**

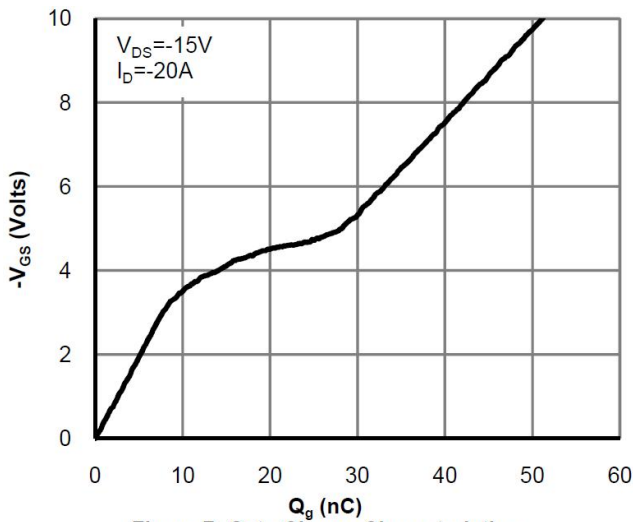


Figure 7: Gate-Charge Characteristics

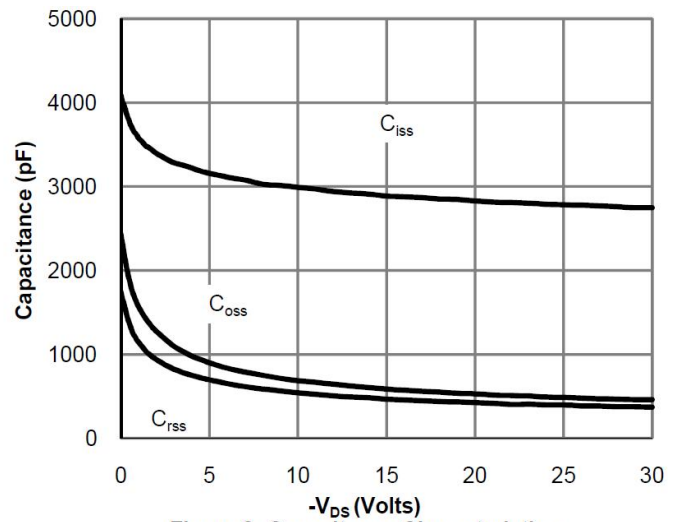


Figure 8: Capacitance Characteristics

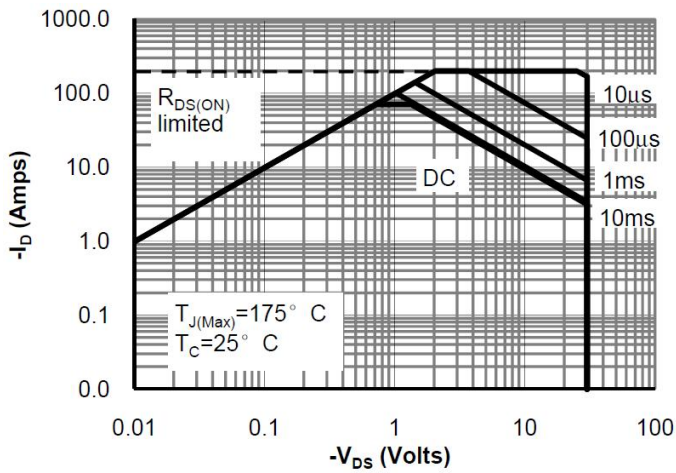


Figure 9: Maximum Forward Biased Safe Operating Area

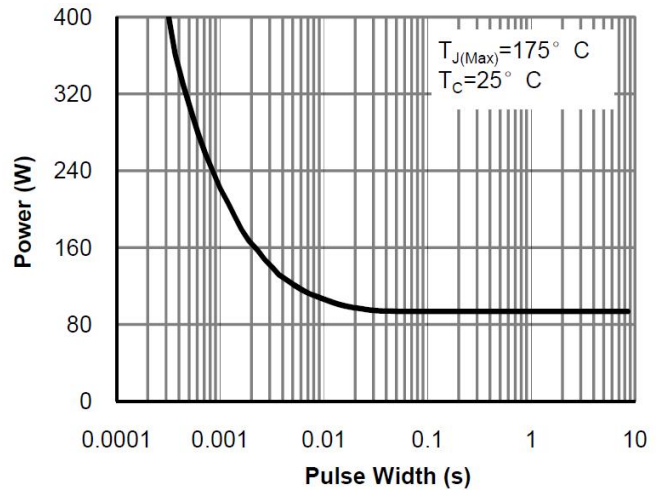


Figure 10: Single Pulse Power Rating Junction-to-Case

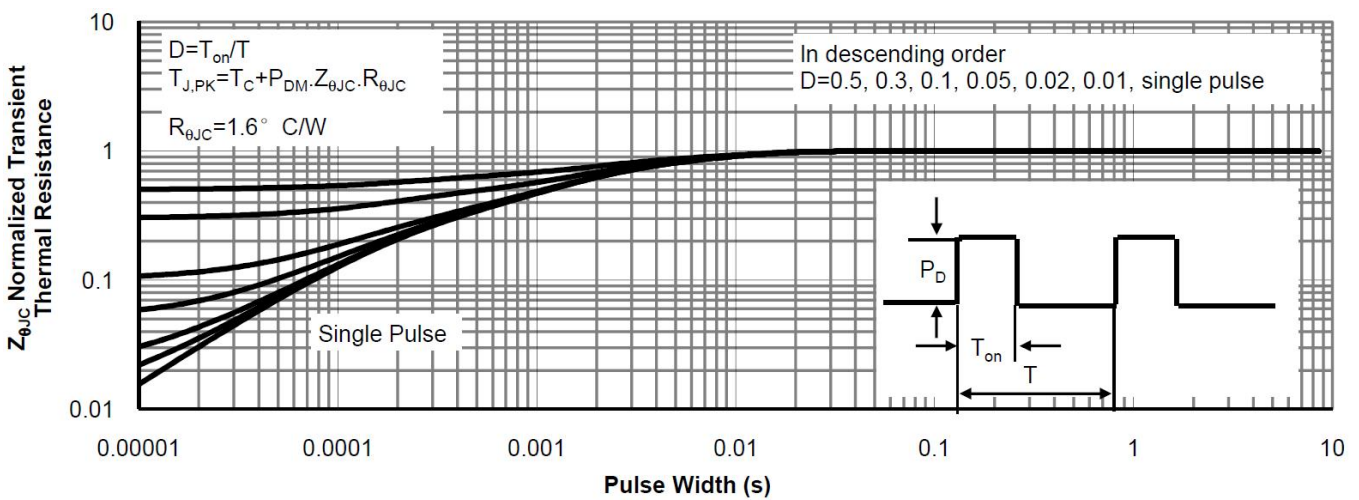
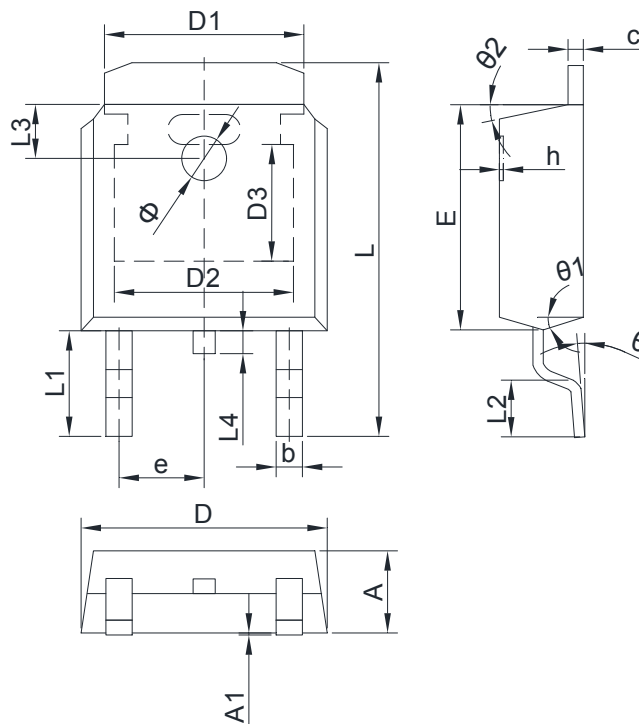


Figure 11: Normalized Maximum Transient Thermal Impedance

8. Dimension and Patterns (TO-252)



SYMBOL	MILLIMETER			SYMBOL	MILLIMETER		
	MIN	Typ.	MAX		MIN	Typ.	MAX
A	2.200	2.300	2.400	h	0.000	0.100	0.200
A1	0.000		0.127	L	9.900	10.100	10.300
b	0.640	0.690	0.740	L1	2.888 REF		
C(电镀后)	0.460	0.520	0.580	L2	1.400	1.550	1.700
D	6.500	6.600	6.700	L3	1.600 REF		
D1	5.334 REF			L4	0.600	0.800	1.000
D2	4.826 REF			Φ	1.100	1.200	1.300
D3	3.166 REF			θ	0°		8°
E	6.000	6.100	6.200	θ1	9° TYP		
e	2.286 TYP			θ2	9° TYP		

**DISCLAIMER**

ELECSUPER PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with ElecSuper products. You are solely responsible for

- (1) selecting the appropriate ElecSuper products for your application;
- (2) designing, validating and testing your application;
- (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements.

These resources are subject to change without notice. ElecSuper grants you permission to use these resources only for development of an application that uses the ElecSuper products described in the resource. Other reproduction and display of these resources are prohibited. No license is granted to any other ElecSuper intellectual property right or to any third party intellectual property right. ElecSuper disclaims responsibility for, and you will fully indemnify ElecSuper and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources. ElecSuper's products are provided subject to ElecSuper's Terms of Sale or other applicable terms available either on [www.elecsuper.com](http://www.elecsuper.com) or provided in conjunction with such ElecSuper products. ElecSuper's provision of these resources does not expand or otherwise alter ElecSuper's applicable warranties or warranty disclaimers for ElecSuper products.

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [MOSFET](#) category:*

*Click to view products by [ElecSuper](#) manufacturer:*

Other Similar products are found below :

[IRFD120](#) [JANTX2N5237](#) [BUK455-60A/B](#) [MIC4420CM-TR](#) [VN1206L](#) [NDP4060](#) [SI4482DY](#) [IPS70R2K0CEAKMA1](#) [SQD23N06-31L-GE3](#)  
[TK16J60W,S1VQ\(O](#) [2SK2614\(TE16L1,Q\)](#) [DMN1017UCP3-7](#) [DMN1053UCP4-7](#) [SQJ469EP-T1-GE3](#) [NTE2384](#) [DMC2700UDMQ-7](#)  
[DMN2080UCB4-7](#) [DMN61D9UWQ-13](#) [US6M2GTR](#) [DMN31D5UDJ-7](#) [DMP22D4UFO-7B](#) [DMN1006UCA6-7](#) [DMN16M9UCA6-7](#)  
[STF5N65M6](#) [IRF40H233XTMA1](#) [STU5N65M6](#) [DMN6022SSD-13](#) [DMN13M9UCA6-7](#) [DMTH10H4M6SPS-13](#) [DMN2990UFB-7B](#)  
[IPB80P04P405ATMA2](#) [2N7002W-G](#) [MCAC30N06Y-TP](#) [MCQ7328-TP](#) [NTMC083NP10M5L](#) [BXP7N65D](#) [BXP4N65F](#) [AOL1454G](#)  
[WMJ80N60C4](#) [BXP2N20L](#) [BXP2N65D](#) [BXT1150N10J](#) [BXT1700P06M](#) [TSM60NB380CP](#) [ROG](#) [RQ7L055BGTGR](#) [DMNH15H110SK3-13](#)  
[SLF10N65ABV2](#) [BSO203SP](#) [BSO211P](#) [IPA60R230P6](#)