

■ PRODUCT CHARACTERISTICS

VDSS	60V
$R_{DS(on)typ}(@V_{GS}=10\text{ V})$	4.3mΩ
$R_{DS(on)typ}(@V_{GS}=4.5\text{ V})$	5.7mΩ
ID	90A

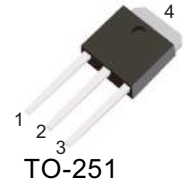
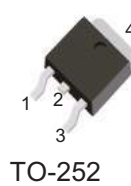
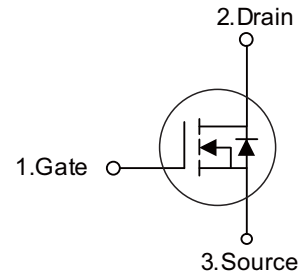
■ FEATURES

Advanced Trench Technology  
Excellent  $R_{DS(ON)}$  and Low Gate Charge  
Lead free product is acquired

■ APPLICATION

PWM Applications  
Load Switch  
Power Management

Symbol



■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT6142D	TO-252	2500 pieces /Reel
N/A	MOT6142C	TO-251	70pieces/Tube

■ ABSOLUTE MAXIMUM RATINGS (T<sub>C</sub>=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V <sub>DS</sub>	60	V
Gate-to-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current	T <sub>C</sub> = 25°C	I <sub>D</sub>	90
	T <sub>C</sub> = 100°C	I <sub>D</sub>	56
Pulsed Drain Current	I <sub>DM</sub>	276	A
Avalanche Energy	E <sub>AS</sub>	182	mJ
Power Dissipation	P <sub>D</sub>	75	W
Thermal Resistance, Junction-to-Case	R <sub>θJC</sub>	1.66	°C/W
Junction & Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to 150	°C

**■ ELECTRICAL CHARACTERISTICS ( $T_J=25^\circ\text{C}$  unless otherwise specified)**

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
<b>Static parameters</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu\text{A}$ , $V_{GS} = 0\text{V}$	60	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 60\text{V}$ , $V_{GS} = 0\text{V}$	-	-	1.0	$\mu\text{A}$
			$T_J = 55^\circ\text{C}$	-	-	5.0
Gate-Body Leakage Current	$I_{GSS}$	$V_{DS} = 0\text{V}$ , $V_{GS} = \pm 20\text{V}$	-	-	$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 250\mu\text{A}$	1	-	2.5	V
Static Drain-Source ON-Resistance	$R_{DS(ON)}$	$V_{GS} = 10\text{V}$ , $I_D = 20\text{A}$	-	4.3	5.3	$\text{m}\Omega$
		$V_{GS} = 4.5\text{V}$ , $I_D = 15\text{A}$	-	5.7	7	$\text{m}\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS} = 5\text{V}$ , $I_D = 20\text{A}$	10	-	-	S
Diode Forward Voltage	$V_{SD}$	$I_S = 1\text{A}$ , $V_{GS} = 0\text{V}$	-	0.70	1.0	V
Diode Continuous Current	$I_S$	$T_C = 25^\circ\text{C}$	-	-	39	A
<b>Dynamic parameters</b>						
Input Capacitance	$C_{ISS}$	$V_{GS} = 0\text{V}$ , $V_{DS} = 20\text{V}$ , $f = 1\text{MHz}$	-	1900	-	pF
Output Capacitance	$C_{OSS}$		-	750	-	pF
Reverse Transfer Capacitance	$C_{RSS}$		-	56	-	pF
Gate Resistance	$R_g$	$V_{GS} = 0\text{V}$ , $V_{DS} = 0\text{V}$ , $f = 1\text{MHz}$	-	5.0	-	$\Omega$
<b>Switching parameters</b>						
Total Gate Charge (@ $V_{GS} = 10\text{V}$ )	$Q_g$	$V_{GS} = 0$ to $10\text{V}$ $V_{DS} = 30\text{V}$ , $I_D = 20\text{A}$	-	39	-	nC
Total Gate Charge (@ $V_{GS} = 4.5\text{V}$ )	$Q_g$		-	18.4	-	nC
Gate Source Charge	$Q_{gs}$		-	8.4	-	nC
Gate Drain Charge	$Q_{gd}$		-	6.8	-	nC
Turn-On Delay Time	$t_{D(on)}$		-	8.8	-	ns
Turn-On Rise Time	$t_r$	$V_{GS} = 10\text{V}$ , $V_{DS} = 30\text{V}$ $R_L = 1.5\Omega$ , $R_{GEN} = 3\Omega$	-	30	-	ns
Turn-Off Delay Time	$t_{D(off)}$	-	41	-	ns	
Turn-Off Fall Time	$t_f$	-	18.9	-	ns	
Body Diode Reverse Recovery Time	$t_{rr}$	$I_F = 20\text{A}$ , $dI_F/dt = 100\text{A}/\mu\text{s}$	-	42	-	ns
Body Diode Reverse Recovery Charge	$Q_{rr}$	$I_F = 20\text{A}$ , $dI_F/dt = 100\text{A}/\mu\text{s}$	-	38	-	nC

■ TYPICAL CHARACTERISTICS

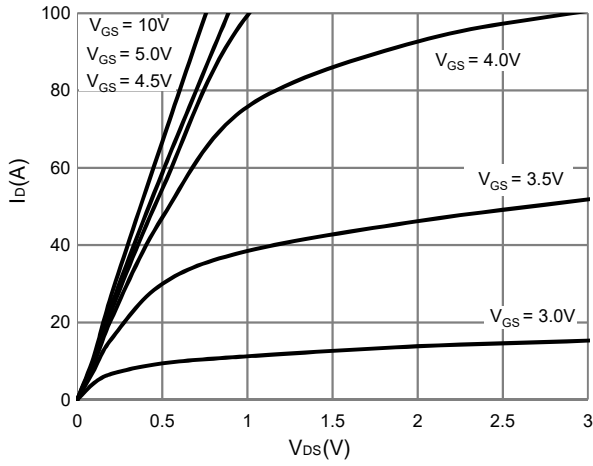


Figure 1: Saturation characteristics

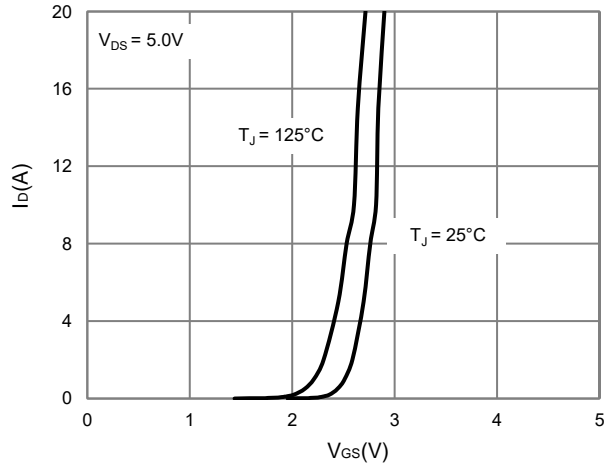


Figure 2: Transfer characteristics

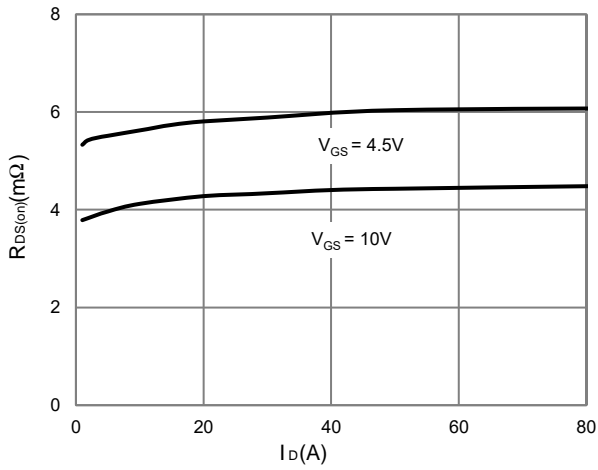


Figure 3:  $R_{DS(ON)}$  vs. drain current

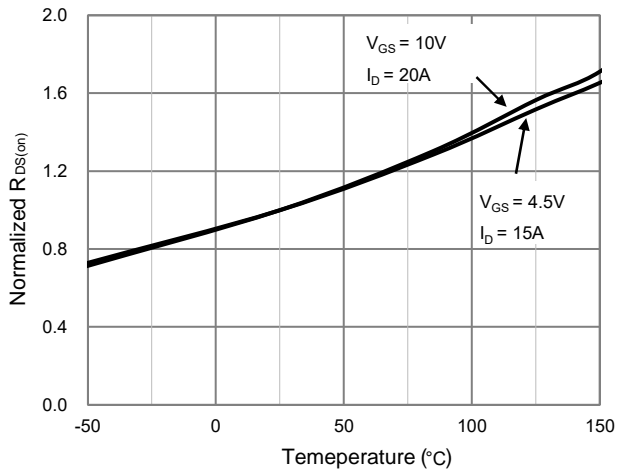


Figure 4:  $R_{DS(ON)}$  vs. junction temperature

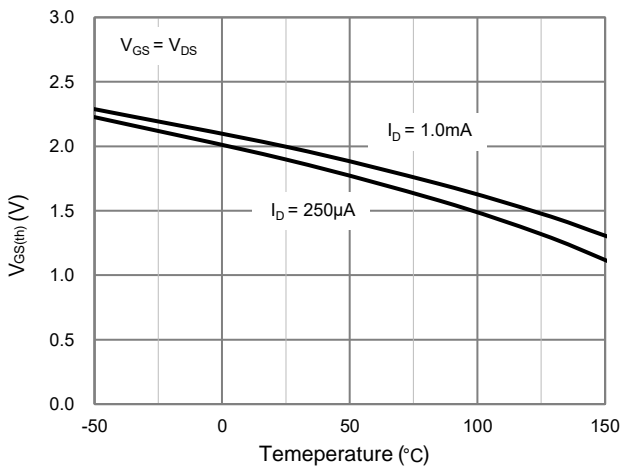


Figure 5:  $V_{GS(th)}$  vs. junction temperature

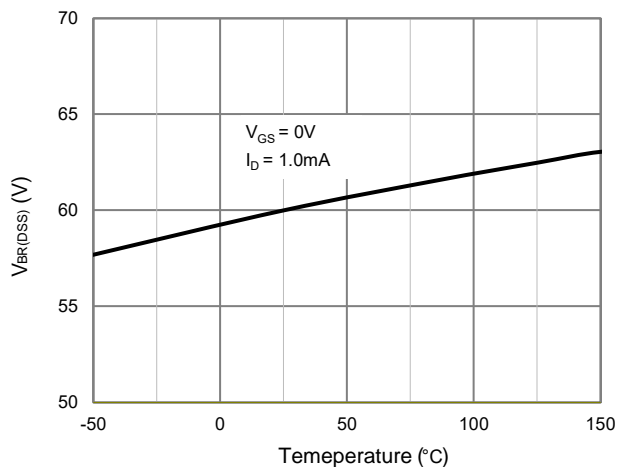


Figure 6:  $V_{BR(DSS)}$  vs. junction temperature

■ TYPICAL CHARACTERISTICS(Cont.)

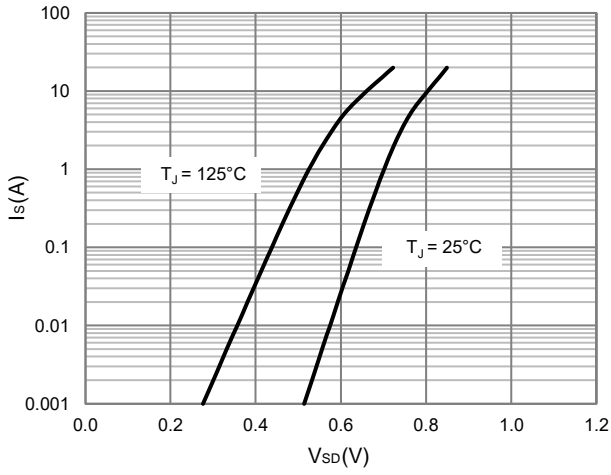


Figure 7: Body-diode characteristics

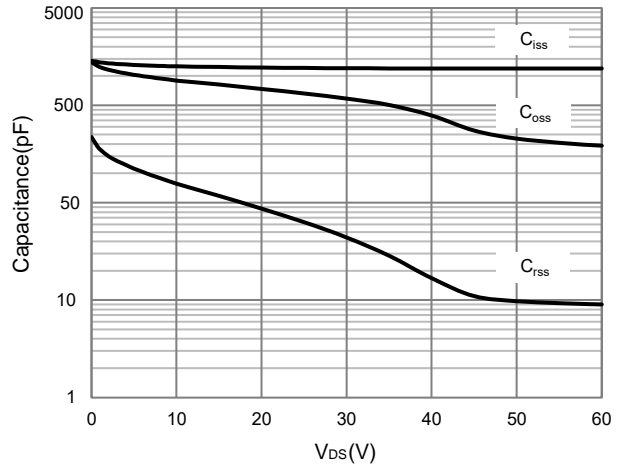


Figure 8: Capacitance characteristics

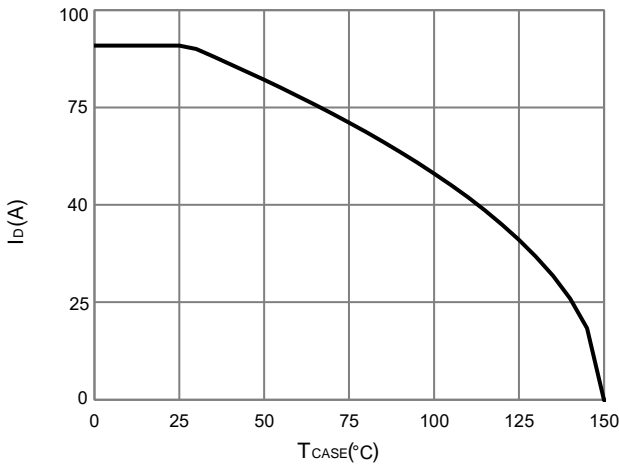


Figure 9: Current de-rating

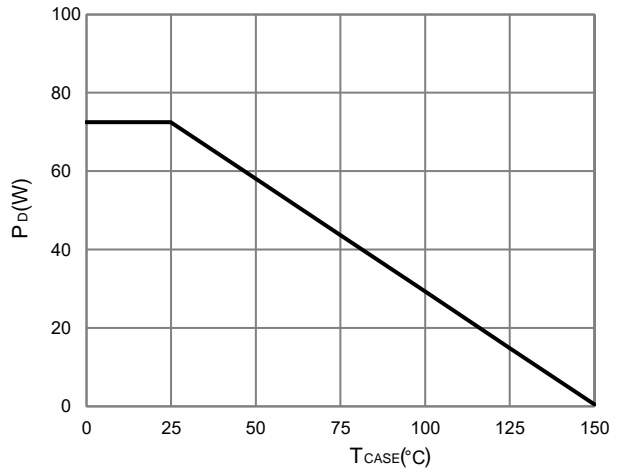


Figure 10: Power de-rating

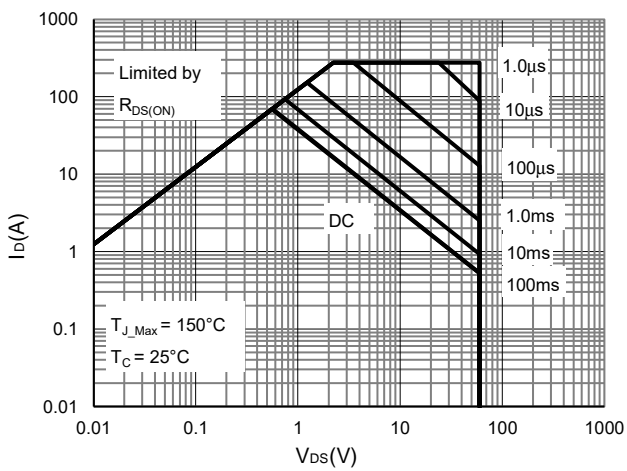
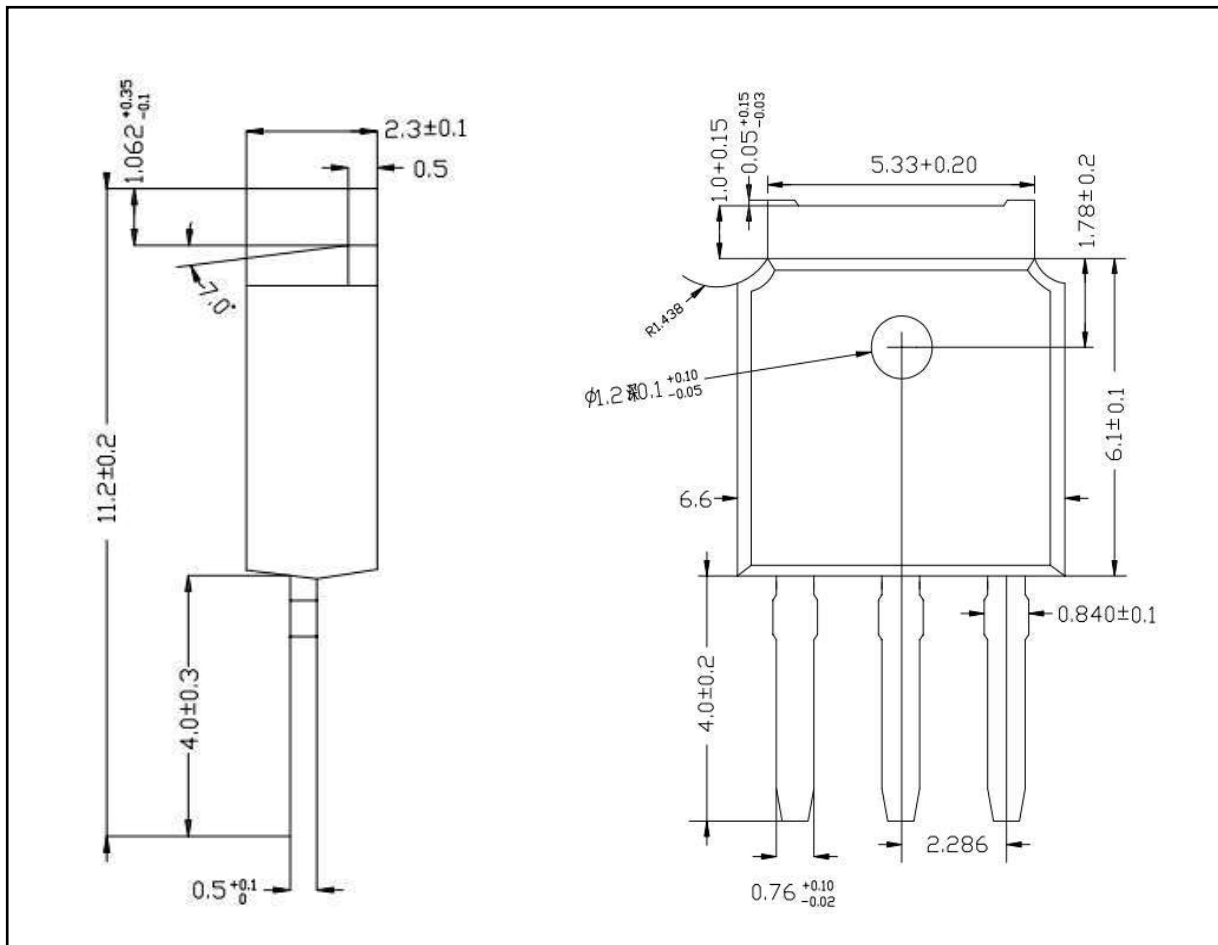
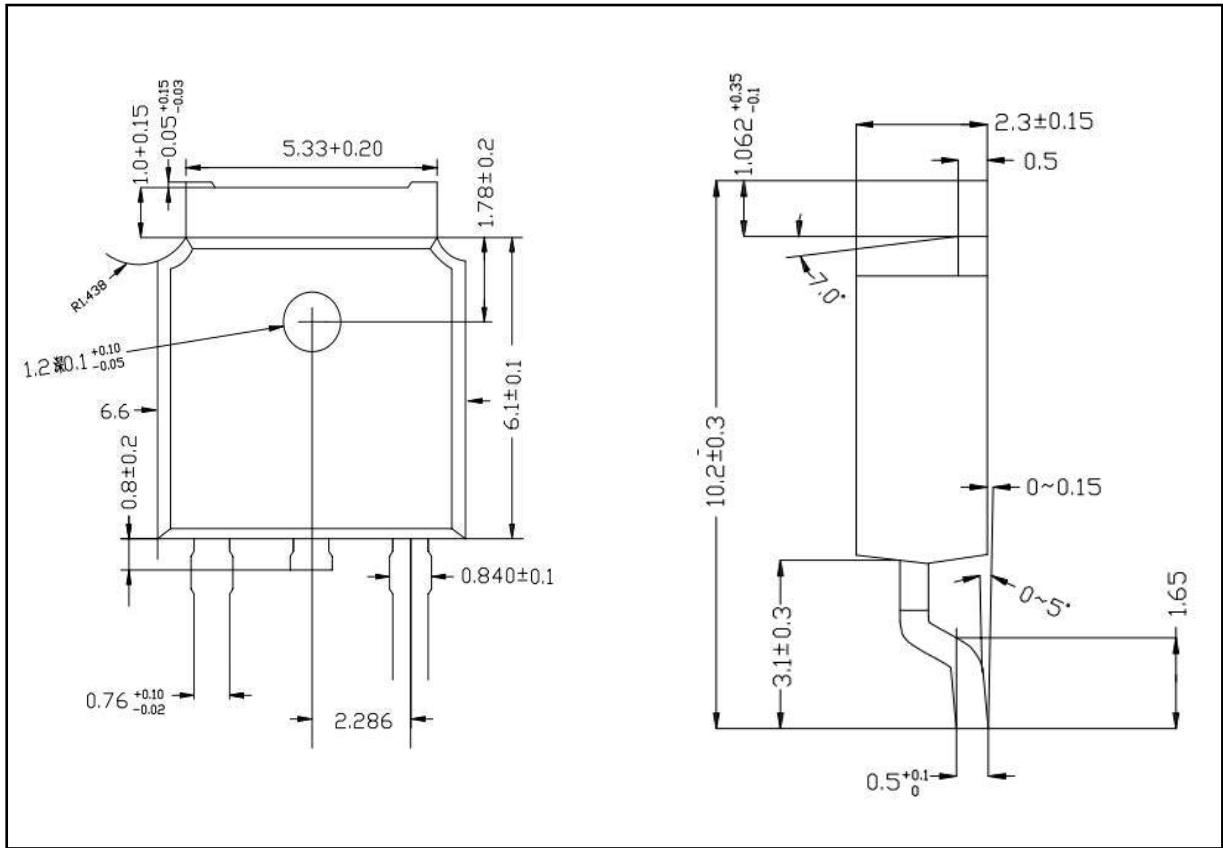


Figure 11: Maximum safe operating area

■ TO-251-3L PACKAGE OUTLINE DIMENSIONS



■ TO-252-2L PACKAGE OUTLINE DIMENSIONS



## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

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

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

Other Similar products are found below :

[MCH3443-TL-E](#) [MCH6422-TL-E](#) [NTNS3A92PZT5G](#) [IRFD120](#) [2SK2464-TL-E](#) [2SK3818-DL-E](#) [2SJ277-DL-E](#) [2SK2267\(Q\)](#) [MIC4420CM-TR](#) [IRFS350](#) [IPS70R2K0CEAKMA1](#) [AON6932A](#) [2SK2614\(TE16L1,Q\)](#) [DMN1017UCP3-7](#) [EFC2J004NUZTDG](#) [SCM040600](#) [NTE2384](#) [2N7000TA](#) [DMN2080UCB4-7](#) [US6M2GTR](#) [DMN31D5UDJ-7](#) [DMP22D4UFO-7B](#) [DMN1006UCA6-7](#) [DMN16M9UCA6-7](#) [STF5N65M6](#) [IRF40H233XTMA1](#) [STU5N65M6](#) [DMN13M9UCA6-7](#) [STU7N60DM2](#) [DMTH10H4M6SPS-13](#) [DMN2990UFB-7B](#) [2N7002W-G](#) [MCQ7328-TP](#) [IPB45P03P4L11ATMA2](#) [BXP4N65F](#) [BXP2N20L](#) [BXP2N65D](#) [TSM60NB380CP](#) [ROG](#) [SLF10N65ABV2](#) [IRF9395MTRPBF](#) [FCMT080N65S3](#) [NTD5C632NLT4G](#) [NTMFS0D55N03CGT1G](#) [NTMFS1D15N03CGT1G](#) [NTMTS0D4N04CTXG](#) [NTMYS2D1N04CLTWG](#) [NVD360N65S3T4G](#) [NVD5C464NLT4G](#) [NVMTS001N06CLTXG](#) [NVMTS1D1N04CTXG](#)