



Features

- ◇ High Speed Power Switching, Logic Level
- ◇ Enhanced Body diode dv/dt capability
- ◇ Enhanced Avalanche Ruggedness
- ◇ 100% UIS Tested, 100% Rg Tested
- ◇ Lead Free, Halogen Free

Product Summary

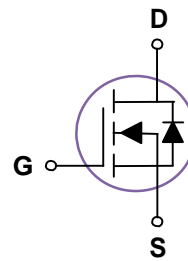
V_{DS}	100	V
$R_{DS(on), Typ @ V_{GS}=10V}$	8.4	m Ω
I_D	100	A

Application

- ◇ Synchronous Rectification in SMPS
- ◇ Hard Switching and High Speed Circuit
- ◇ DC/DC in Telecoms and Industrial



TO-262



Absolute Maximum Ratings at $T_J=25^\circ\text{C}$ (unless otherwise specified)

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current (Silicon Limited)	I_D	$T_C=25^\circ\text{C}$	100	A
		$T_C=100^\circ\text{C}$	38	
Drain to Source Voltage	V_{DS}	-	100	V
Gate to Source Voltage	V_{GS}	-	± 20	V
Pulsed Drain Current	I_{DM}	-	400	A
Avalanche Energy, Single Pulse	E_{AS}	$L=0.1\text{mH}, T_C=25^\circ\text{C}$	80	mJ
Power Dissipation	P_D	$T_C=25^\circ\text{C}$	3.1	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to 150	$^\circ\text{C}$

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Case	$R_{\theta JC}$	0.5	$^\circ\text{C/W}$
Thermal Resistance Junction-Ambient (steady state)	$R_{\theta JA}$	62	$^\circ\text{C/W}$

Electrical Characteristics at $T_j=25^\circ\text{C}$ (unless otherwise specified)

Static Characteristics

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1	1.8	2.5	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS}=0V, V_{DS}=95V, T_j=25^\circ\text{C}$	-	-	1	μA
		$V_{GS}=0V, V_{DS}=95V, T_j=125^\circ\text{C}$	-	-	100	
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Drain to Source on Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=14A$	-	8.4	10	m Ω
		$V_{GS}=4.5V, I_D=10A$	-	10.8	15	
Transconductance	g_{fs}	$V_{DS}=5V, I_D=14A$	-	70	-	S
Gate Resistance	R_G	$V_{GS}=0V, V_{DS}$ Open, $f=1\text{MHz}$	-	1.5	-	Ω

Dynamic Characteristics

Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=50V, f=1\text{MHz}$	-	1791	-	pF
Output Capacitance	C_{oss}		-	145	-	
Reverse Transfer Capacitance	C_{rss}		-	8	-	
Total Gate Charge	$Q_g(10V)$	$V_{DD}=50V, I_D=14A, V_{GS}=10V$	-	49	-	nC
Total Gate Charge	$Q_g(4.5V)$		-	21	-	
Gate to Source Charge	Q_{gs}		-	8	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	7	-	
Turn on Delay Time	$t_{d(on)}$	$V_{DD}=50V, I_D=14A, V_{GS}=10V, R_G=10\Omega,$	-	10	-	ns
Rise time	t_r		-	5	-	
Turn off Delay Time	$t_{d(off)}$		-	32	-	
Fall Time	t_f		-	6	-	

Reverse Diode Characteristics

Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_F=14A$	-	0.9	1.2	V
Reverse Recovery Time	t_{rr}	$V_R=50V, I_F=14A, di_F/dt=500A/\mu s$	-	47	-	ns
Reverse Recovery Charge	Q_{rr}		-	226	-	nC



Fig 1. Typical Output Characteristics

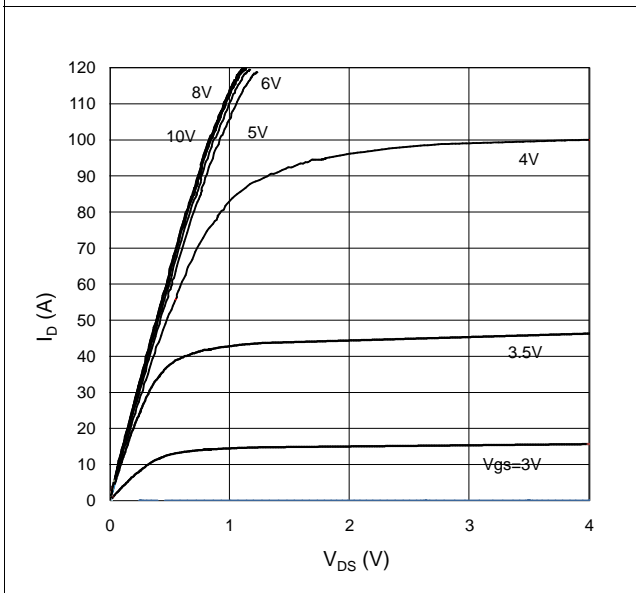


Figure 2. On-Resistance vs. Gate-Source Voltage

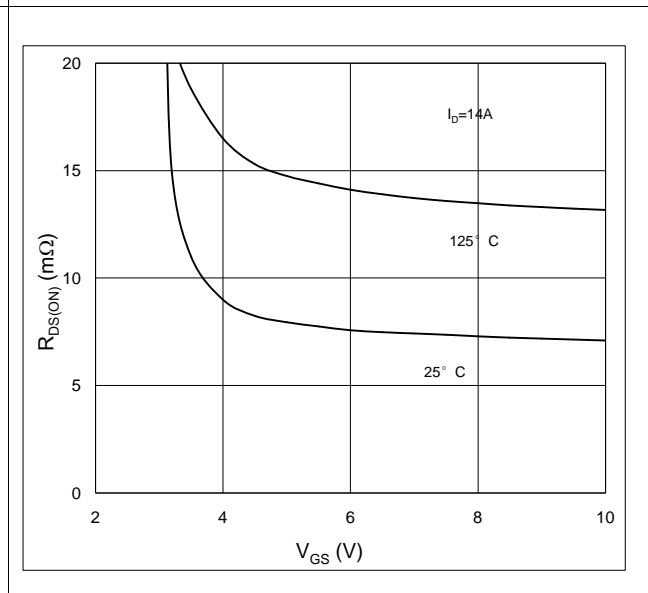


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

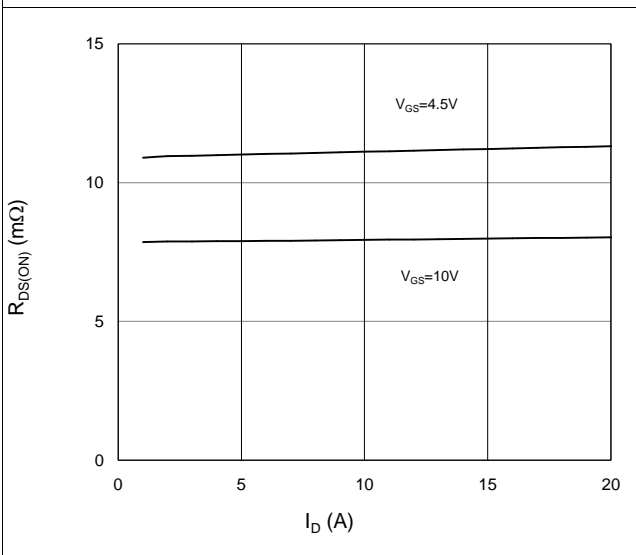


Figure 4. Normalized On-Resistance vs. Junction Temperature

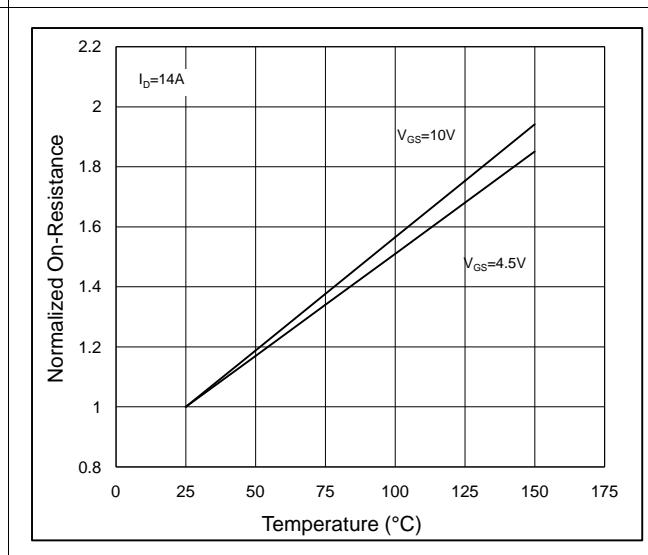


Figure 5. Typical Transfer Characteristics

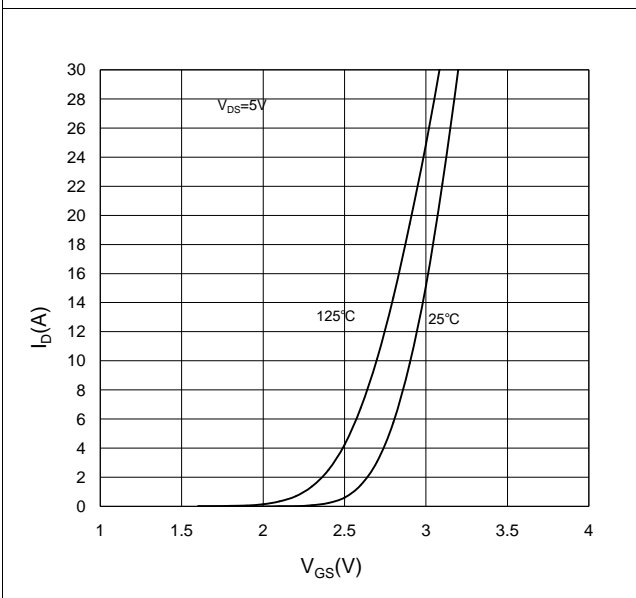


Figure 6. Typical Source-Drain Diode Forward Voltage

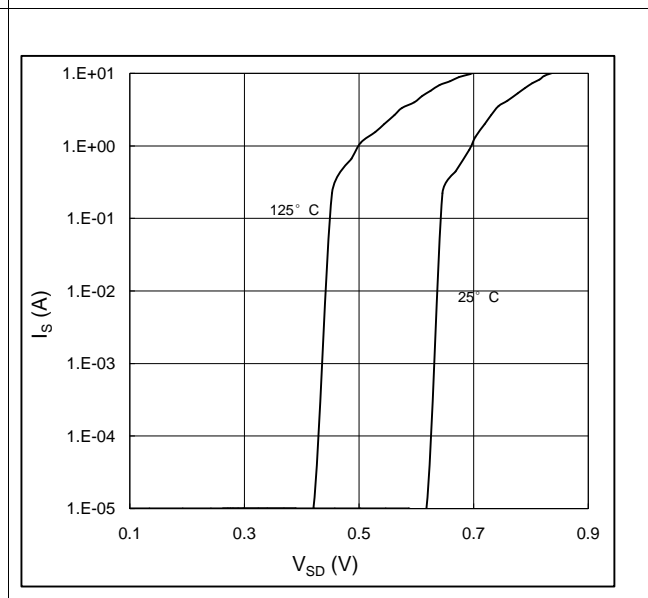




Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

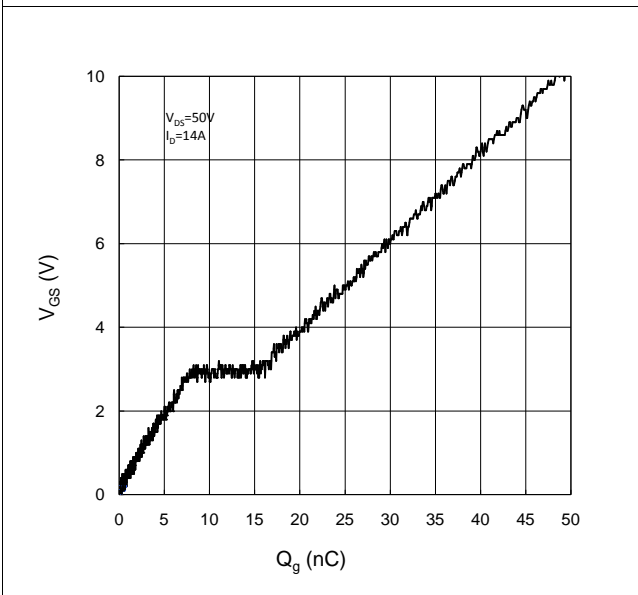


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

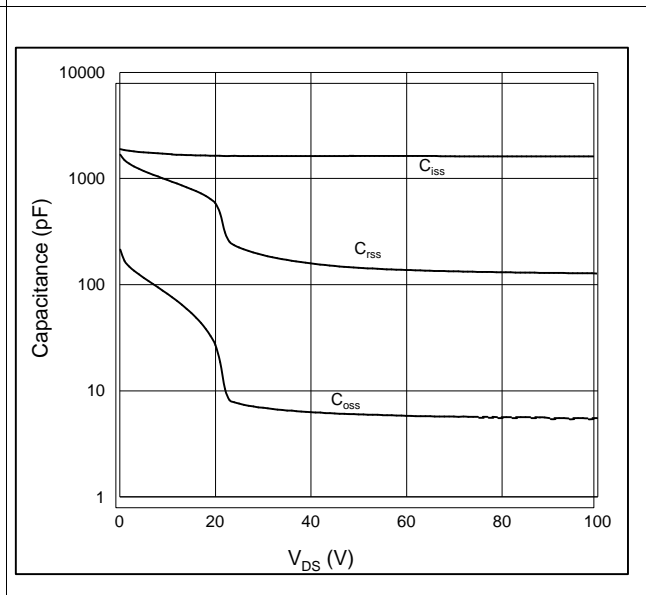


Figure 9. Maximum Safe Operating Area

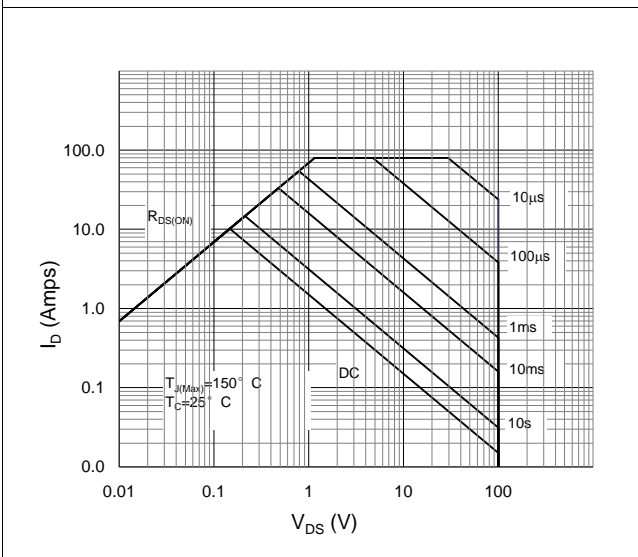


Figure 10. Maximum Drain Current vs. Case Temperature

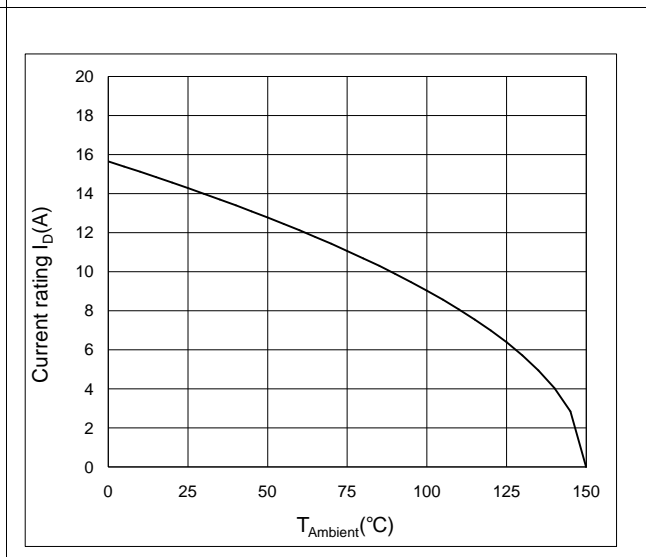
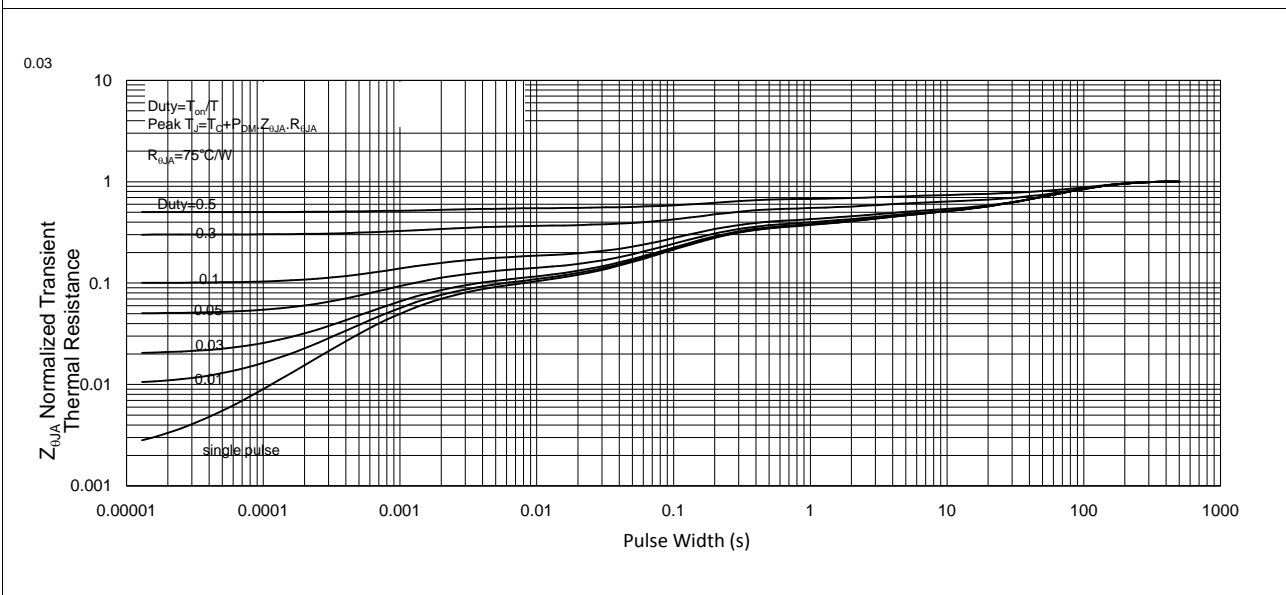
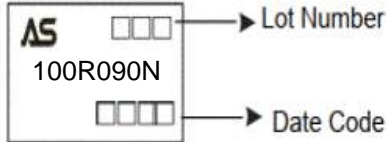


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient

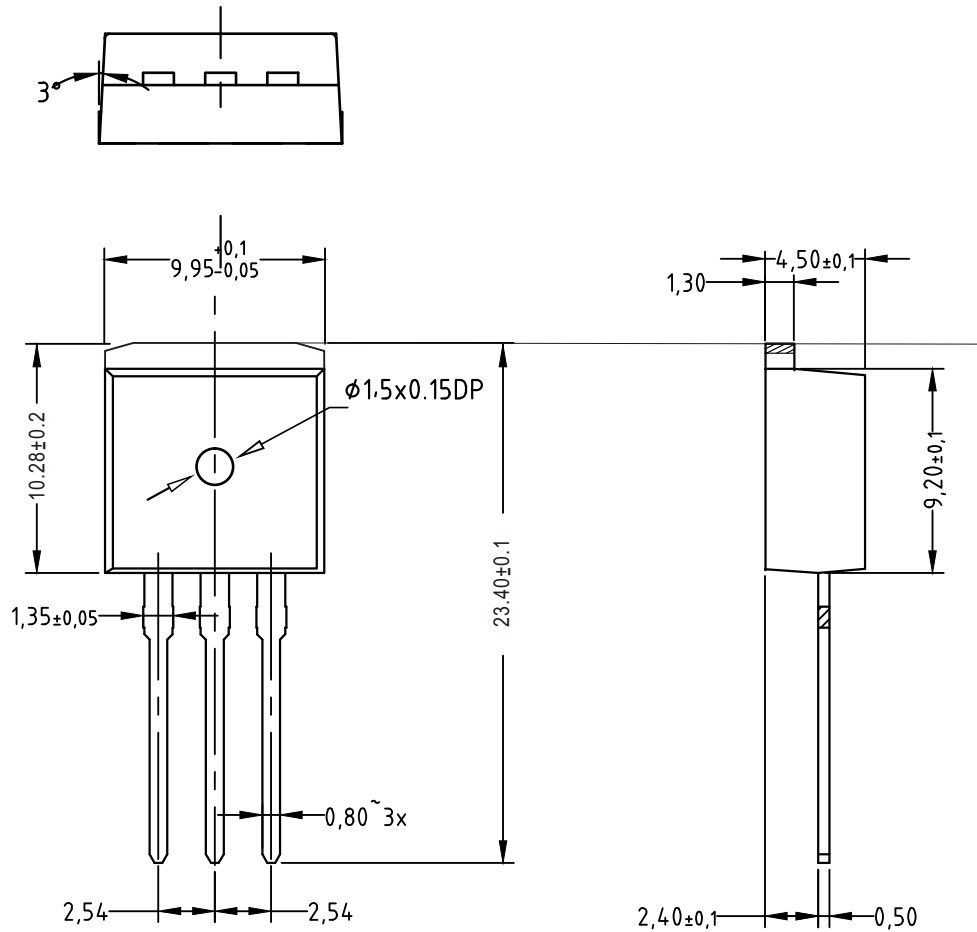


Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM100R090NKG-T	100R090N	TO-262	Tube	50/Tubel

PACKAGE	MARKING
TO-262	 <p>The diagram shows a rectangular marking area on a TO-262 package. It contains the following information from top to bottom: the logo 'AS', a three-digit lot number represented by three squares (□□□), the part number '100R090N', and a four-digit date code represented by four squares (□□□□). Arrows point from the text 'Lot Number' and 'Date Code' to their respective square representations.</p>

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