International
IOR Rectifier

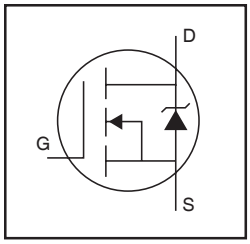
AUTOMOTIVE GRADE

AUIRL1404Z
AUIRL1404ZS
AUIRL1404ZL

HEXFET® Power MOSFET

Features

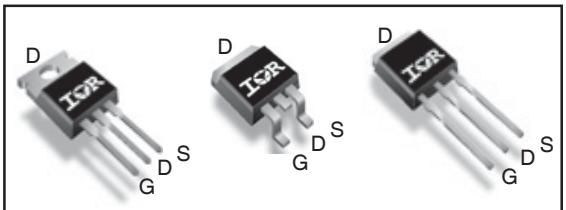
- Logic Level
- Advanced Process Technology
- Ultra Low On-Resistance
- 175°C Operating Temperature
- Fast Switching
- Repetitive Avalanche Allowed up to Tjmax
- Lead-Free, RoHS Compliant
- Automotive Qualified *



$V_{(BR)DSS}$	40V
$R_{DS(on)}$ typ.	2.5mΩ
max.	3.1mΩ
$I_{D\ (Silicon\ Limited)}$	180A ⑩
$I_{D\ (Package\ Limited)}$	160A

Description

Specifically designed for Automotive applications, this HEXFET® Power MOSFET utilizes the latest processing techniques to achieve extremely low on-resistance per silicon area. Additional features of this design are a 175°C junction operating temperature, fast switching speed and improved repetitive avalanche rating . These features combine to make this design an extremely efficient and reliable device for use in Automotive applications and a wide variety of other applications.



TO-220AB AUIRL1404Z | D^2Pak AUIRL1404ZS | TO-262 AUIRL1404ZL

G	D	S
Gate	Drain	Source

Absolute Maximum Ratings

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only; and functional operation of the device at these or any other condition beyond those indicated in the specifications is not implied.Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability. The thermal resistance and power dissipation ratings are measured under board mounted and still air conditions. Ambient temperature (T_A) is 25°C, unless otherwise specified.

	Parameter	Max.	Units
I_D @ T_C = 25°C	Continuous Drain Current, V_{GS} @ 10V (Silicon Limited)	180⑩	A
I_D @ T_C = 100°C	Continuous Drain Current, V_{GS} @ 10V(Silicon Limited)	130	
I_D @ T_C = 25°C	Continuous Drain Current, V_{GS} @ 10V(Package Limited)	160	
I_{DM}	Pulsed Drain Current ①	790	
P_D @T_C = 25°C	Power Dissipation	200	W
	Linear Derating Factor	1.3	W/°C
V_{GS}	Gate-to-Source Voltage	± 16	V
E_{AS}	Single Pulse Avalanche Energy (Thermally limited) ②	190	mJ
E_{AS} (Tested)	Single Pulse Avalanche Energy Tested Value ⑥	490	
I_{AR}	Avalanche Current ①	See Fig.12a, 12b, 15, 16	A
E_{AR}	Repetitive Avalanche Energy ⑤		mJ
T_J	Operating Junction and	-55 to + 175	°C
T_{STG}	Storage Temperature Range		
	Soldering Temperature, for 10 seconds	300 (1.6mm from case)	
	Mounting Torque, 6-32 or M3 screw	10 lbf•in (1.1N•m)	

Thermal Resistance

	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	—	0.75 ⑨	°C/W
$R_{\theta CS}$	Case-to-Sink, Flat, Greased Surface ⑦	0.50	—	
$R_{\theta JA}$	Junction-to-Ambient ⑦	—	62	
$R_{\theta JA}$	Junction-to-Ambient (PCB Mount) ⑧	—	40	

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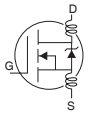
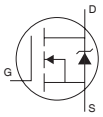
*Qualification standards can be found at http://www.irf.com/

Static Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	40	—	—	V
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.034	—	V/°C
		—	2.5	3.1	
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	—	4.7	mΩ
		—	—	5.9	
$V_{GS(th)}$	Gate Threshold Voltage	1.4	—	2.7	V
gfs	Forward Transconductance	120	—	—	S
I_{DSS}	Drain-to-Source Leakage Current	—	—	20	µA
		—	—	250	
I_{GSS}	Gate-to-Source Forward Leakage	—	—	200	nA
	Gate-to-Source Reverse Leakage	—	—	-200	

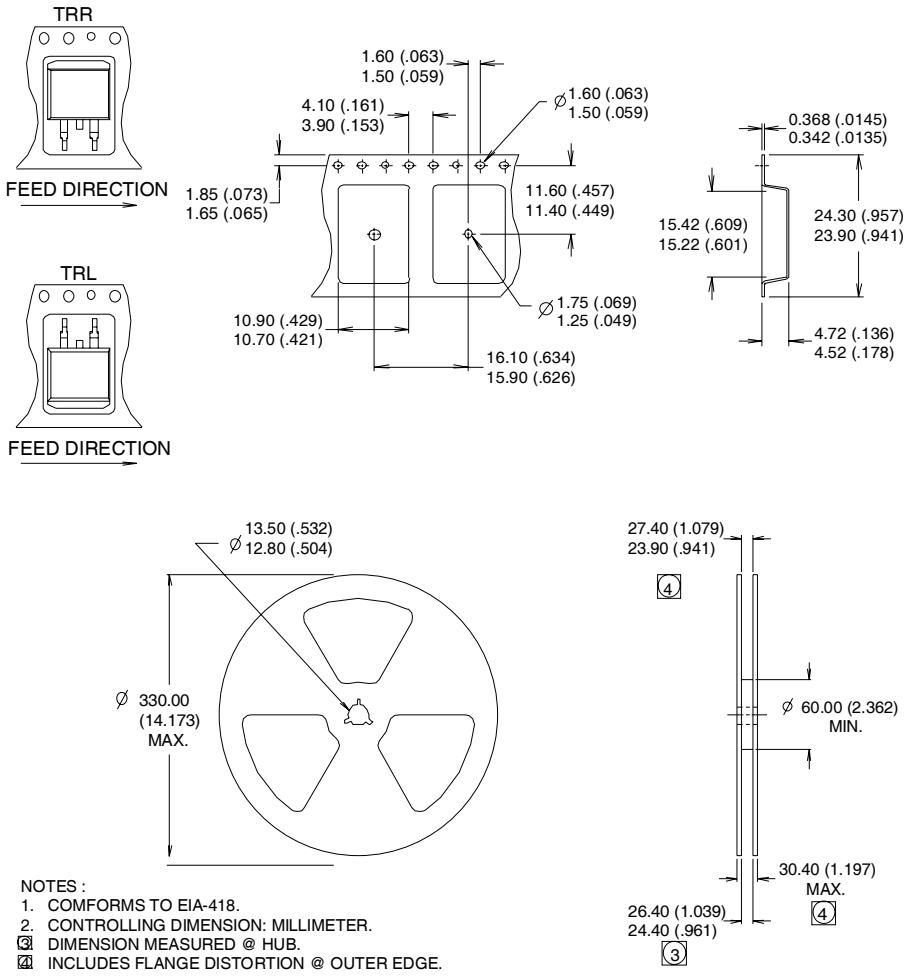
Dynamic Electrical Characteristics @ T_J





Note through ,* * are on page 3

D²Pak Tape & Reel Infomation



NOTES :
1. COMFORMS TO EIA-418.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION MEASURED @ HUB.
4. INCLUDES FLANGE DISTORTION @ OUTER EDGE.

Ordering Information

Base part	Package Type	Standard Pack		Complete Part Number
		Form	Quantity	
AUIRL1404Z	TO-220	Tube	50	AUIRL1404Z
AUIRL1404ZL	TO-262	Tube	50	AUIRL1404ZL
AUIRL1404ZS	D2Pak	Tube	50	AUIRL1404ZS
		Tape and Reel Left	800	AUIRL1404ZSTRL
		Tape and Reel Right	800	AUIRL1404ZSTRR

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