

SuperMOS –TO-263 60V BV_{DSS} , $1.8m\Omega$ $R_{DS(ON)}$, N-channel MOSFET

1. Description

The IRF3205STRLPBF(ES) is N-Channel enhancement MOS Field Effect Transistor. Uses advanced shielded gate 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 IRF3205STRLPBF(ES) is Pb-free.

2. Features

- 60V, $R_{DS(ON)}=1.8m\Omega$ (Typ.) @ $V_{GS}=10V$
- High density cell design for low $R_{DS(on)}$
- Material: Halogen free
- Reliable and rugged
- Avalanche Rated
- Low leakage current

3. Applications

- PWM applications
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

100% UIS TESTED

4. Ordering Information

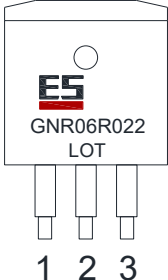
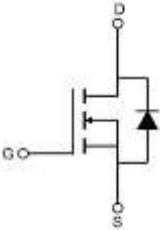
Part Number	Package	Marking	Material	Packing	Quantity per Reel	Flammability Rating	Reel Size
IRF3205STRLPBF(ES)	TO-263	GNR06R022/LOT	Halogen free	Tape & Reel	800 PCS	UL 94V-0	13 inches

5. Pin Configuration and Functions

Pin	Function	Outline	Circuit Diagram
1	Gate	Note 1	
3	Source		

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2	Drain		
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Note1:

This diagram is only an electrical schematic, and the actual pin size is based on POD.

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}	60	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C=25^\circ\text{C}$	I_D	150	A
	$T_C=100^\circ\text{C}$		100	
Maximum Power Dissipation		P_D	125	W
Pulsed Drain Current		I_{DM}	550	A
Operating Junction Temperature		T_J	150	$^\circ\text{C}$
Lead Temperature		T_L	260	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-55 to 150	$^\circ\text{C}$

Thermal resistance ratings

Single Operation				
Parameter	Symbol	Typical	Maximum	Unit
Junction-to-Case Thermal Resistance	$R_{\theta JC}$		1.0	$^\circ\text{C/W}$

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Electrical Characteristics

At TA = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =48V, V _{GS} =0V			1.0	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250uA	2.0	3.0	4.0	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		1.8	2.2	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =20A		120		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} =0V, f=1MHz, V _{DS} =30V		6035		pF
Output Capacitance	C _{OSS}			1365		
Reverse Transfer Capacitance	C _{RSS}			35		
Total Gate Charge	Q _{G(TOT)}	V _{GS} =10V, V _{DD} =30V, I _D =20A		78		nC
Gate-to-Source Charge	Q _{GS}			28		
Gate-to-Drain Charge	Q _{GD}			10		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{d(ON)}	V _{GS} =10V, V _{DD} =30V, I _D =1.5A, R _G =6Ω		13		ns
Rise Time	t _r			21		
Turn-Off Delay Time	t _{d(OFF)}			57		
Fall Time	t _f			25		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} =0V, I _S =20A			1.5	V

7. Typical Characteristics

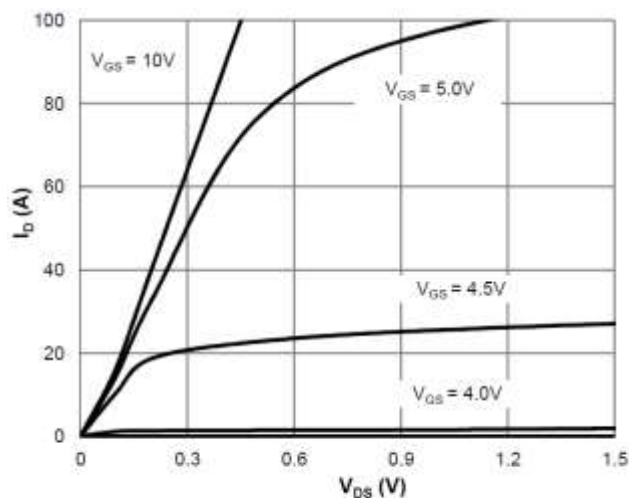


Figure 1: Saturation Characteristics

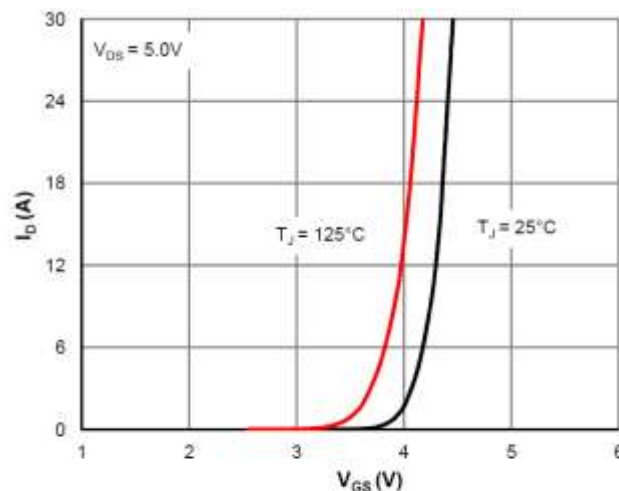


Figure 2: Transfer Characteristics

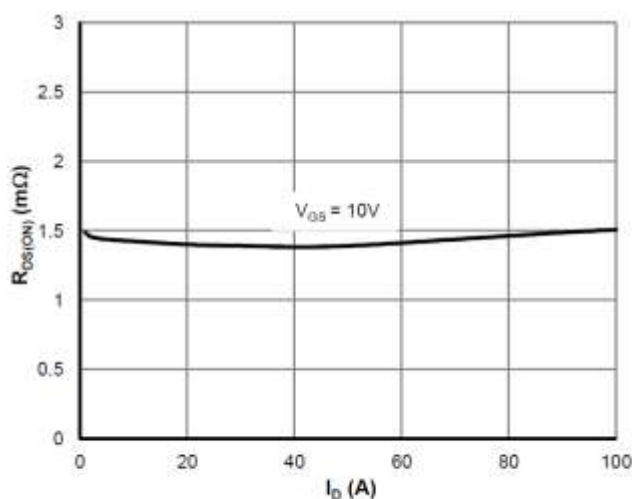


Figure 3: $R_{DS(ON)}$ vs. Drain Current

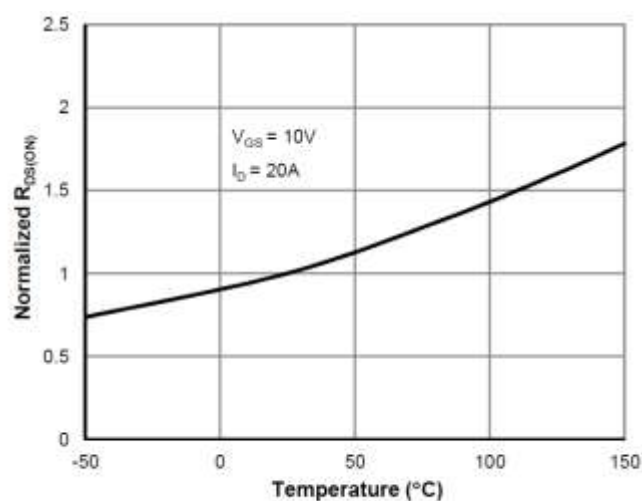


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

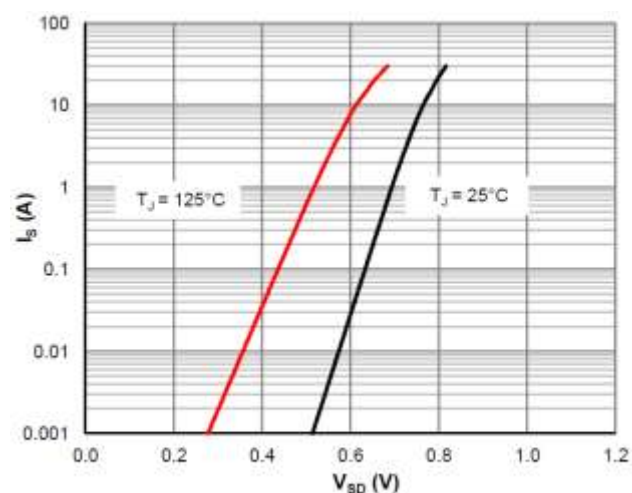


Figure 5: Body-Diode Characteristics

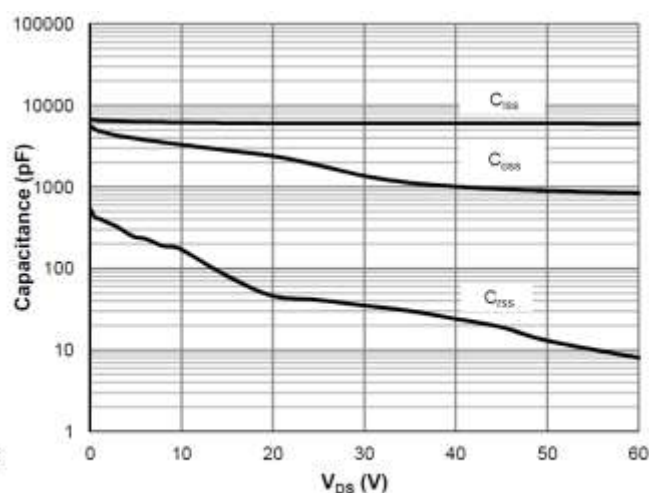
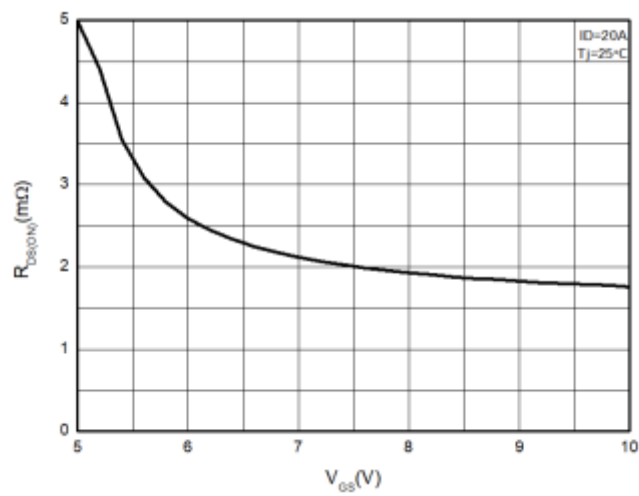


Figure 6: Capacitance Characteristics

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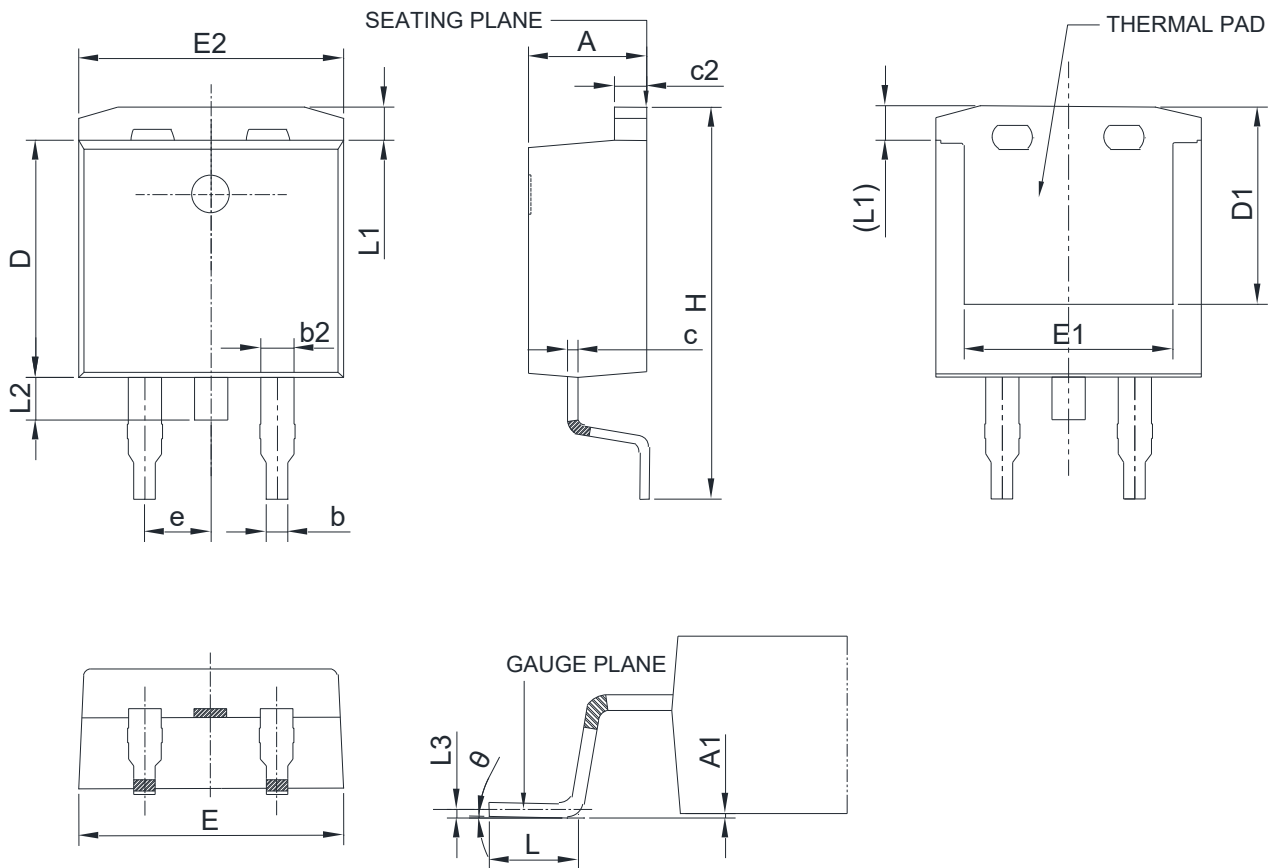
**Figure 7: on-Resistance vs. Gate to Source**

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8. Dimension (TO-263)

POD A(Q)

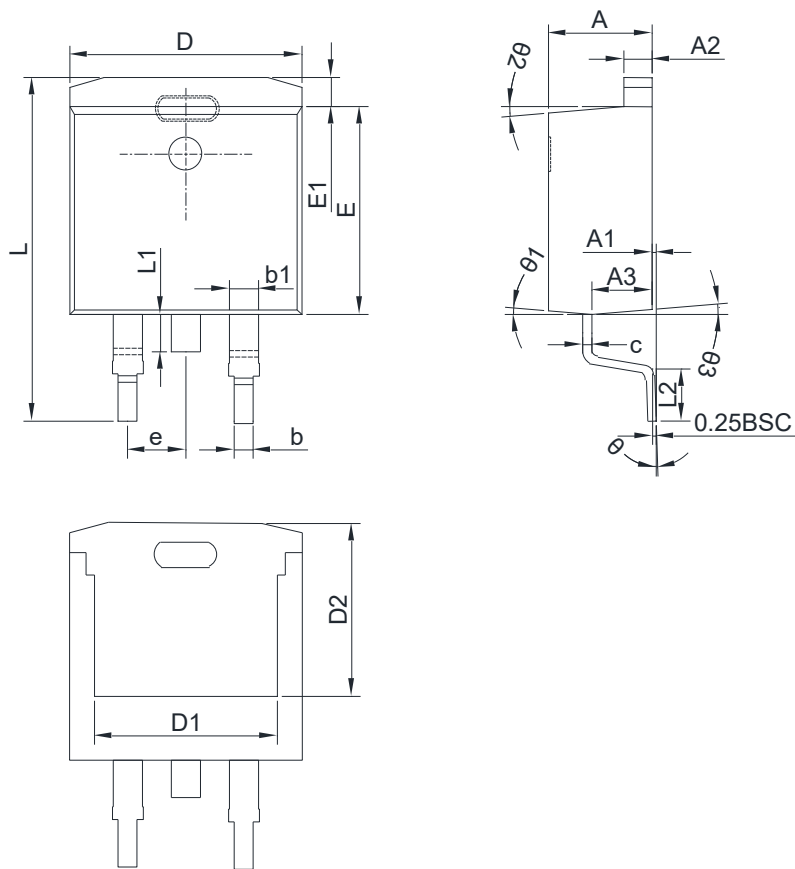


COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER							
SYMBOL	MIN	TYP	MAX	SYMBOL	MIN	TYP	MAX
A	4.47	4.57	4.67	E	9.70	9.92	10.30
A1	0.00	0.10	0.25	E1	7.98	8.18	8.48
b	0.71	0.81	0.91	E2	9.85	10.00	10.15
b2	1.17	1.27	1.37	L	2.25	2.54	2.80
c	0.360	0.381	0.500	L1	1.10	1.35	1.60
c2	1.17	1.27	1.37	L2			1.78
D	8.70	9.00	9.30	L3	0.254BSC		
D1	7.10	7.44	7.80	e	2.44	2.54	2.64
H	15.00	15.28	15.60	θ	0°		8°

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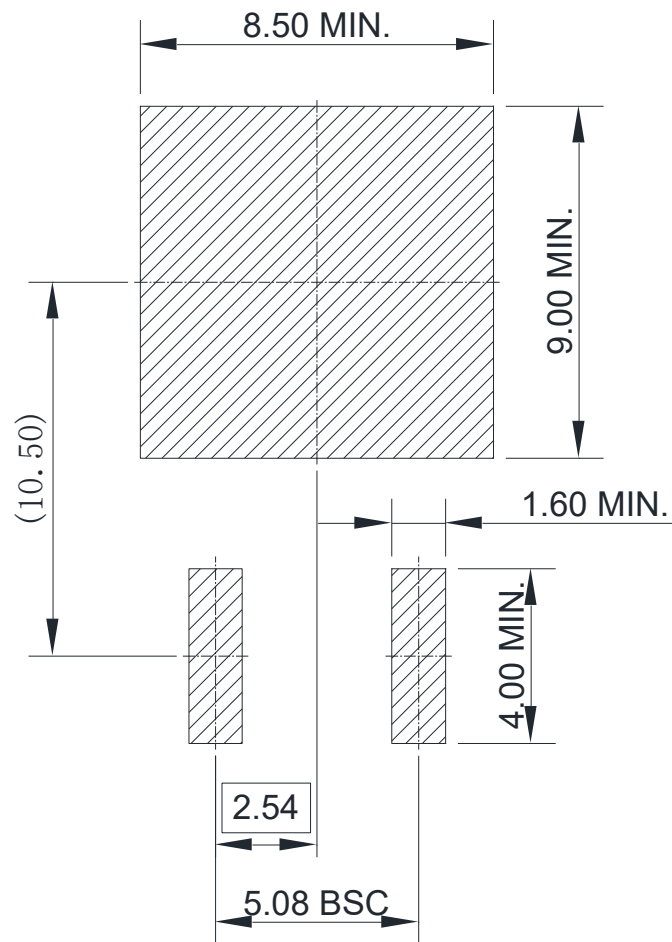
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POD B(X)



COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER							
SYMBOL	MIN	TYP	MAX	SYMBOL	MIN	TYP	MAX
A	4.37	4.57	4.77	E	8.50	8.70	8.90
A1	0.00		0.25	E1	1.07	1.27	1.47
A2	1.22	1.27	1.42	e	2.540TYP		
A3	2.49	2.69	2.89	L	14.70	15.10	15.50
b	0.70	0.81	0.96	L1	1.40	1.55	1.70
b1	1.17	1.27	1.47	L2	2.00	2.30	2.60
c	0.30	0.38	0.53	θ	0°		9°
D	9.86	10.16	10.36	θ1	7° TYP		
D1	8.400REF			θ2	7° TYP		
D2	7.073REF			θ3	3° TYP		

9. Recommended Soldering Footprint



DIMENSIONS: MILLIMETERS

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