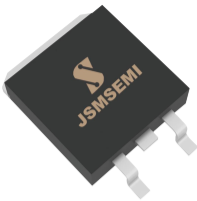
FEATURES

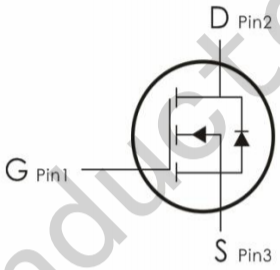
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability



TO-263-2L

APPLICATIONS

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)



Device Marking and Package Information		
Device	**Package**	**Marking**
IRF740ASTRLPBF	TO-263	IRF740AS

Absolute Maximum Ratings T_C = 25ºC, unless otherwise noted				
Parameter		**Symbol**	**Value**	**Unit**
			TO-263	
Drain-Source Voltage (V_{GS} = 0V)		V_{DSS}	400	V
Continuous Drain Current		I_D	10	A
Pulsed Drain Current	(note1)	I_{DM}	40	A
Gate-Source Voltage		V_{GSS}	±30	V
Single Pulse Avalanche Energy	(note2)	E_{AS}	96	mJ
Avalanche Current	(note1)	I_{AS}	4.4	A
Repetitive Avalanche Energy	(note1)	E_{AR}	57	mJ
Power Dissipation (T_C = 25ºC)		P_D	63	W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55~+150	ºC

Thermal Resistance			
Parameter	**Symbol**	**Value**	**Unit**
		TO-263	
Thermal Resistance, Junction-to-Case	R_{thJC}	1.5	K/W
Thermal Resistance, Junction-to-Ambient	R_{thJA}	60	

Specifications T_J = 25ºC, unless otherwise noted

Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	400	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 400V, V_{GS} = 0V, T_J = 25ºC	--	--	1	μA
Gate-Source Leakage	I_{GSS}	V_{GS} = ±30V	--	--	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS} , I_D = 250μA	3.0	--	4.0	V
Drain-Source On-Resistance (Note3)	$R_{DS(on)}$	V_{GS} = 10V, I_D = 5A	--	0.45	0.55	Ω
Dynamic						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1.0MHz	--	1050	--	pF
Output Capacitance	C_{oss}		--	112	--	
Reverse Transfer Capacitance	C_{rss}		--	8	--	
Total Gate Charge	Q_g	V_{DD} = 320V, I_D = 10A, V_{GS} = 10V	--	28	--	nC
Gate-Source Charge	Q_{gs}		--	9	--	
Gate-Drain Charge	Q_{gd}		--	7	--	
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 200V, I_D =10A, R_G = 25 Ω	--	39	--	ns
Turn-on Rise Time	t_r		--	20	--	
Turn-off Delay Time	$t_{d(off)}$		--	138	--	
Turn-off Fall Time	t_f		--	34	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	T_C = 25 ºC	--	--	10	A
Pulsed Diode Forward Current	I_{SM}		--	--	40	
Body Diode Voltage	V_{SD}	T_J = 25ºC, I_{SD} = 5A, V_{GS} = 0V	--	--	1.4	V
Reverse Recovery Time	t_{rr}	V_{GS} = 0V,I_S = 10A, di_F/dt =100A /μs	--	249	--	ns
Reverse Recovery Charge	Q_{rr}		--	1.87	--	μC

Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. L = 10.0mH, V_{DD} = 50V, R_G = 25 Ω, Starting T_J = 25 ºC
3. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 1. Output Characteristics (T_J= 25ºC)

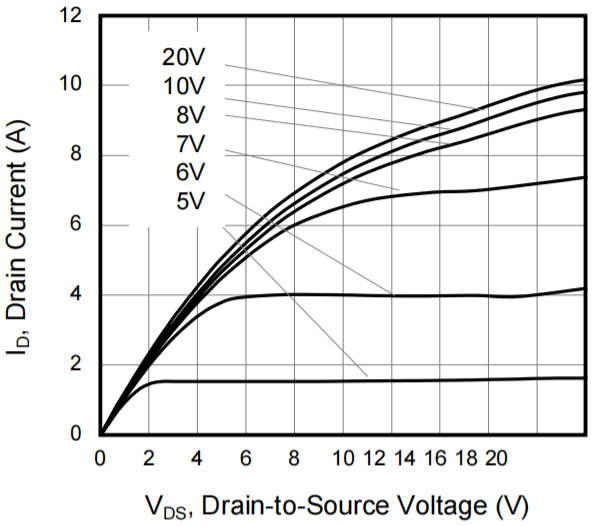


Figure 2. Body Diode Forward Voltage

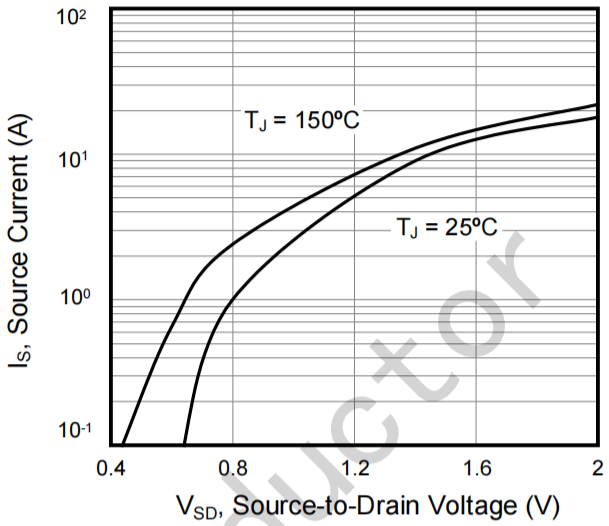


Figure 3. Drain Current vs. Temperature

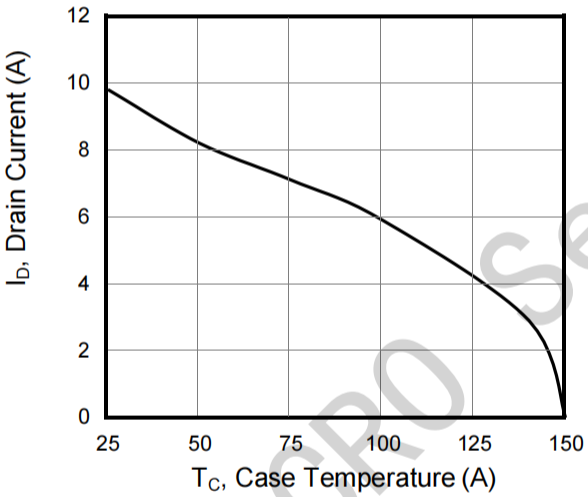


Figure 4. BV_{DSS} Variation vs. Temperature

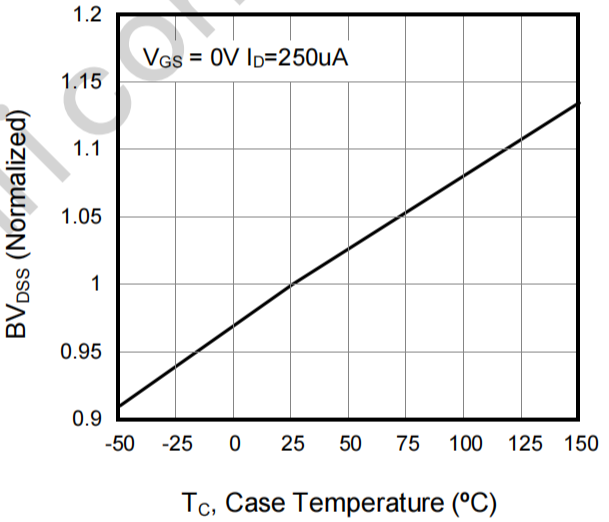


Figure 5. Transfer Characteristics

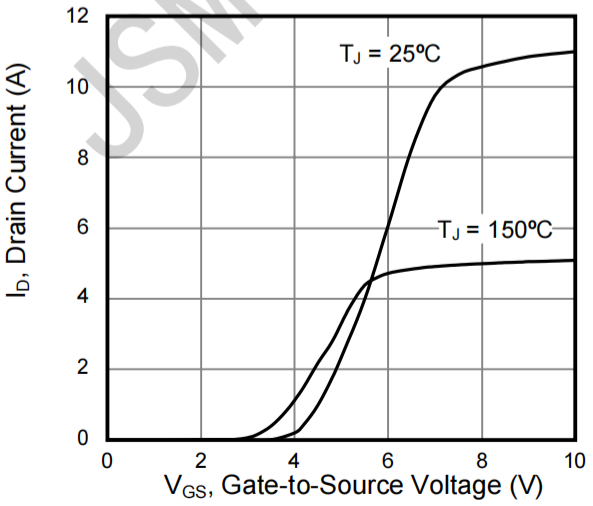
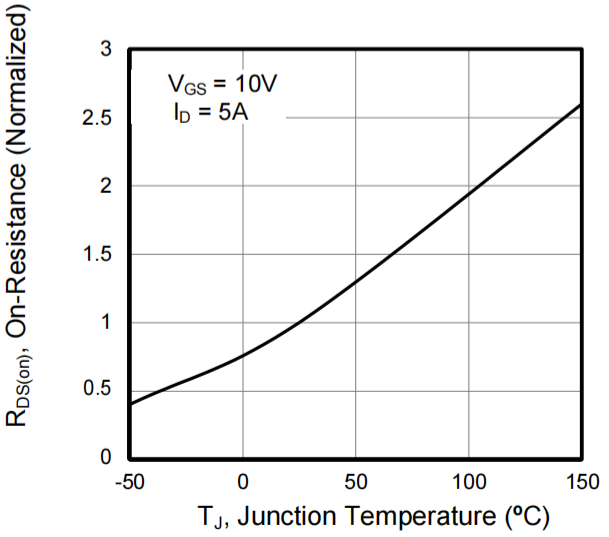


Figure 6. On-Resistance vs. Temperature



Typical Characteristics T_J = 25°C, unless otherwise noted

Figure 7. Capacitance

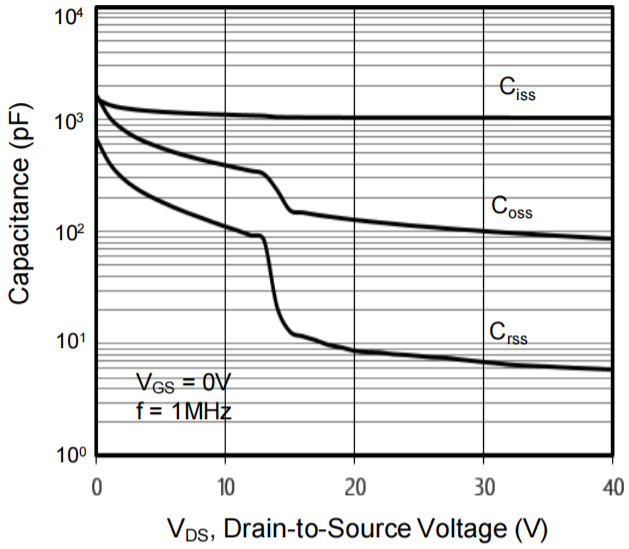


Figure 8. Gate Charge

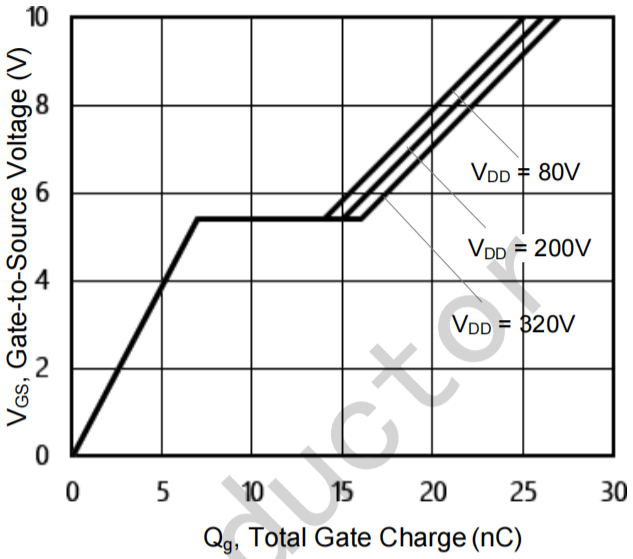


Figure 9. Transient Thermal Impedance

TO-220

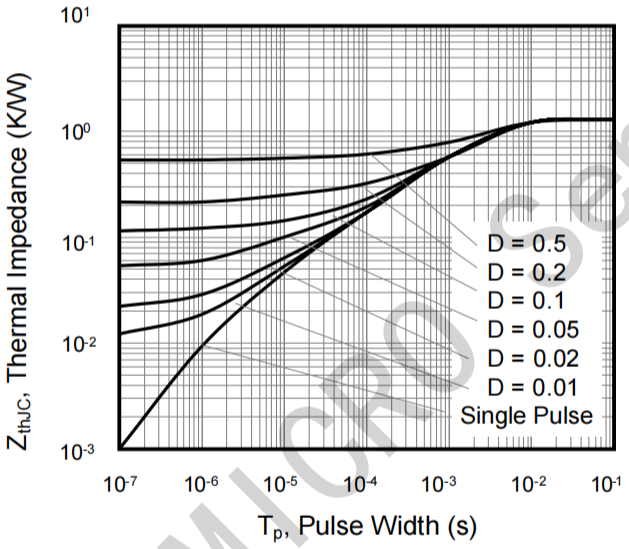


Figure 10. Transient Thermal Impedance

TO-220F

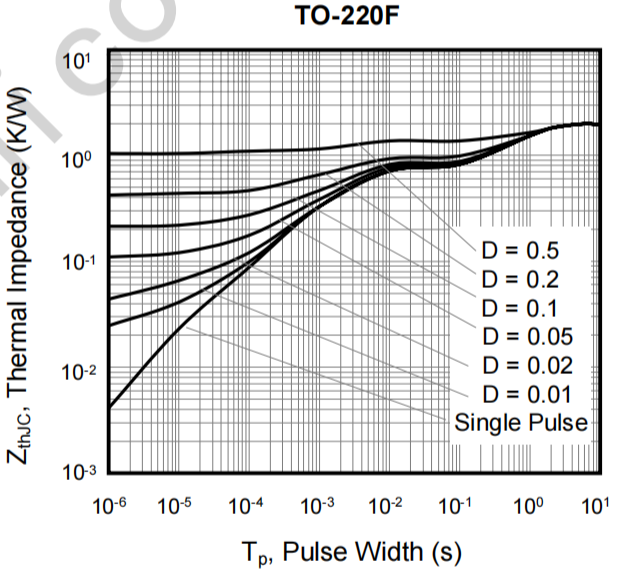


Figure A：Gate Charge Test Circuit and Waveform

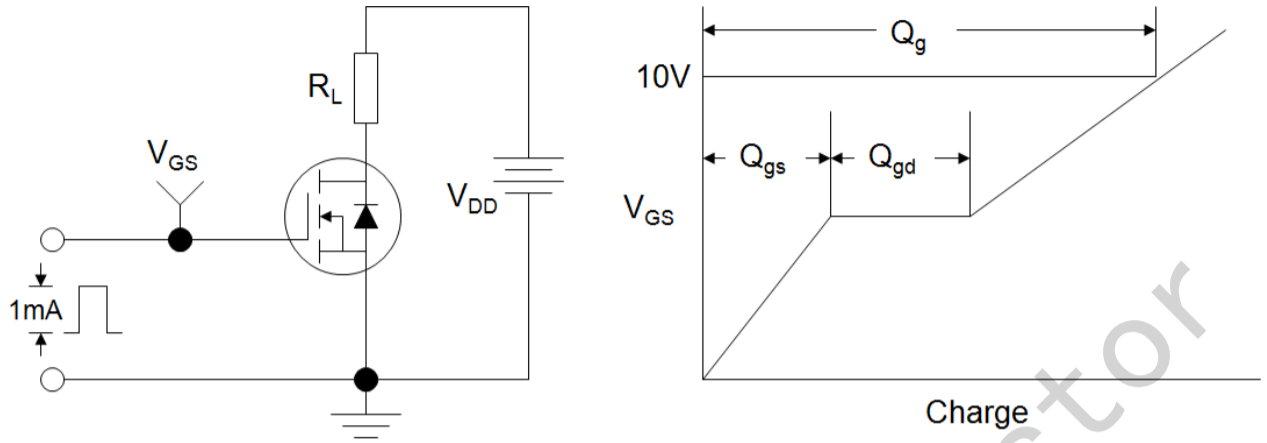


Figure B：Resistive Switching Test Circuit and Waveform

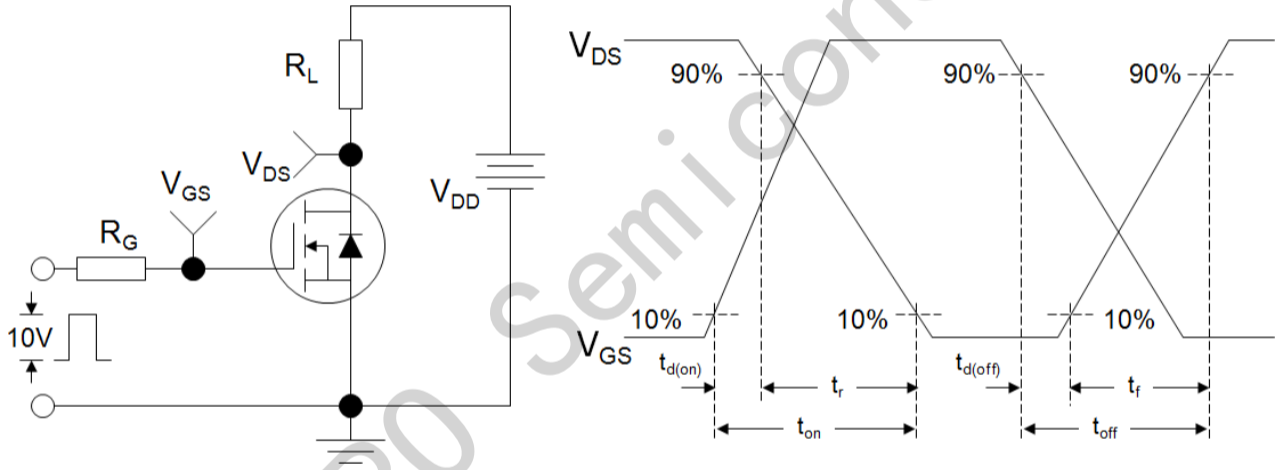
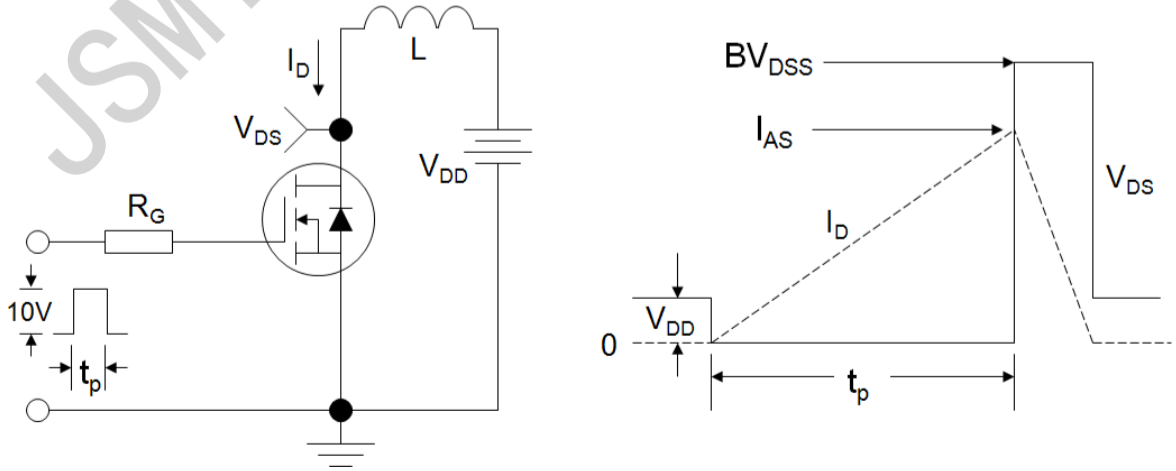
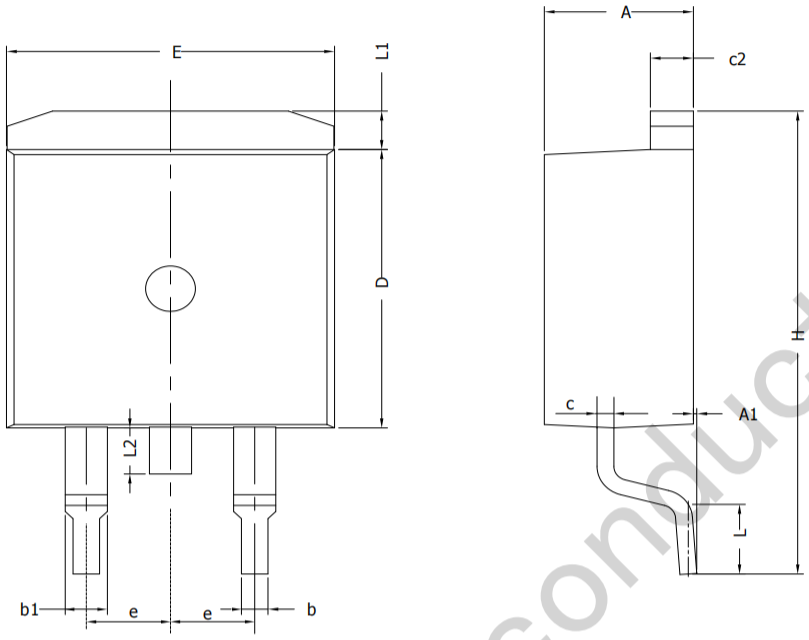


Figure C：Unclamped Inductive Switching Test Circuit and Waveform



Package Outline: TO-263



SYMBOL	MIN	NOM	MAX
A	4.30	4.57	4.72
A1	0	0.10	0.25
b	0.71	0.81	0.91
c	0.30	---	0.60
c2	1.17	1.27	1.37
D	8.50	---	9.35
E	9.80	---	10.45
e	2.54BSC		
H	14.70	---	15.75
L	2.00	2.30	2.74
L1	1.12	1.27	1.42
L2	---	---	1.75