TAVAKOL ELECTRONIC
توکل الکترونیک
مرجع تخصصی تأمین قطعات الکترونیکی اورجینال

این دیتاشیت توسط توکل الکترونیک تهیه و ارائه شده است.
جهت مشاهده قیمت، موجودی و ثبت سفارش این قطعه به وب‌سایت توکل الکترونیک مراجعه فرمایید.

مشاهده قیمت و خرید
برای خرید و مشاهده سایر محصولات کلیک کنید

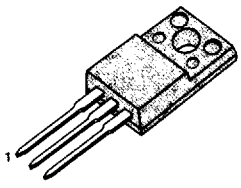
IRFS630/631

N-CHANNEL POWER MOSFETS

FEATURES

- Lower $R_{DS(ON)}$
- Improved inductive ruggedness
- Fast switching times
- Rugged polysilicon gate cell structure
- Lower input capacitance
- Extended safe operating area
- Improved high temperature reliability

TO-220F



1.Gate 2.Drain 3.Source

PRODUCT SUMMARY

Part Number	V_{DS}	$R_{DS(on)}$	I_D
IRFS630	200V	0.4Ω	5.9A
IRFS631	150V	0.4Ω	5.9A

ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	IRFS630	IRFS631	Unit
Drain-Source Voltage (1)	V_{DSS}	200	150	Vdc
Drain-Gate Voltage (R_{GS}=1.0MΩ)(1)	V_{DGR}	200	150	Vdc
Gate-Source Voltage	V_{GS}	±20		Vdc
Continuous Drain Current T_C=25 °C	I_D	5.9		Adc
Continuous Drain Current T_C=100 °C	I_D	4.1		Adc
Drain Current - Pulsed (3)	I_{DM}	36		Adc
Gate Current - Pulsed	I_{GM}	±1.5		Adc
Single Pulsed Avalanche Energy (4)	E_{AS}	78		mJ
Avalanche Current	I_{AS}	5.9		A
Total Power Dissipation at T_C=25 °C Derate above 25 °C	P_D	35 0.28		Watts W/ °C
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150		°C
Maximum Lead Temp. for Soldering Purposes, 1/8" from case for 5 seconds	T_L	300		°C

Notes : (1) T_J=25°C to 150°C
(2) Pulse test : Pulse width≤300μs, Duty Cycle≤2%
(3) Repetitive rating : Pulse width limited by max. junction temperature
(4) L=4mH, V_{dd}=50V, R_G=25Ω, Starting T_J=25°C

SAMSUNG ELECTRONICS

7964142 0028991 4T4

ELECTRICAL CHARACTERISTICS (Tc=25°C unless otherwise specified)

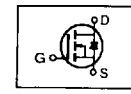
Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
BV_{DSS}	Drain-Source Breakdown Voltage					
	IRFS630	200	-	-	V	V_{GS}=0V, I_D=250μA
	IRFS631	150	-	-	V	
$V_{GS(th)}$	Gate Threshold Voltage	2.0	-	4.0	V	V_{DS}=V_{GS}, I_D=250μA
I_{GSS}	Gate-Source Leakage Forward	-	-	100	nA	V_{GS}=20V
I_{GSS}	Gate-Source Leakage Reverse	-	-	-100	nA	V_{GS}=-20V
I_{DSS}	Zero Gate Voltage Drain Current	-	-	250	μA	V_{DS}=Max. Rating, V_{GS}=0V
		-	-	1000	μA	V_{DS}=0.8 Max. Rating, V_{GS}=0V, Tc=125°C
$R_{DS(on)}$	Static Drain-Source On Resistance(2)	-	-	0.4	Ω	V_{GS}=10V, I_D=4.5A
g_{fs}	Forward Transconductance (2)	3	4.6	-	℧	V_{DS}≥50V, I_D=4.5A
C_{iss}	Input Capacitance	-	750	-	pF	V_{GS}=0V, V_{DS}=25V, f=1.0MHz
C_{oss}	Output Capacitance	-	120	-	pF	
C_{rss}	Reverse Transfer Capacitance	-	45	-	pF	
$t_{d(on)}$	Turn-On Delay Time	-	-	30	ns	V_{DD}=0.5 BV_{DSS}, I_D=9.0A, Z_O=18Ω
t_r	Rise Time	-	-	50	ns	(MOSFET switching times are essentially
$t_{d(off)}$	Turn-Off Delay Time	-	-	50	ns	independent of operating temperature)
t_f	Fall Time	-	-	40	ns	
Q_g	Total Gate Charge (Gate-Source Plus Gate-Drain)	-	-	34	nC	V_{GS}=10V, I_D=9.0A, V_{DS}=0.8 Max. Rating (Gate charge is essentially independent of
Q_{gs}	Gate-Source Charge	-	6.1	-	nC	operating temperature)
Q_{gd}	Gate-Drain ("Miller") Charge	-	12.7	-	nC	

THERMAL RESISTANCE

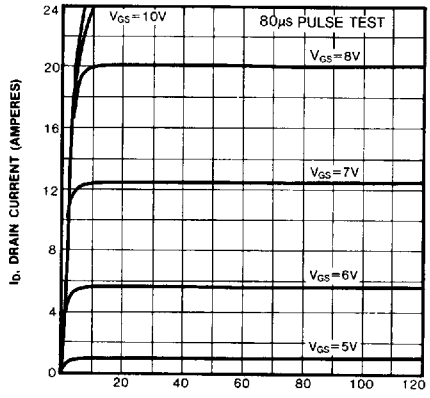
Symbol	Characteristics		All	Units	Remark
R_{thJC}	Junction-to-Case	MAX	3.57	K/W	
R_{thCS}	Case-to-Sink	TYP	0.5	K/W	Mounting surface flat, smooth and greased
R_{thJA}	Junction-to-Ambient	MAX	62.5	K/W	Free Air Operation

Notes : (1) T_J=25°C to 150°C
(2) Pulse test : Pulse width≤300μs, Duty Cycle≤2%
(3) Repetitive rating : Pulse width limited by max. junction temperature

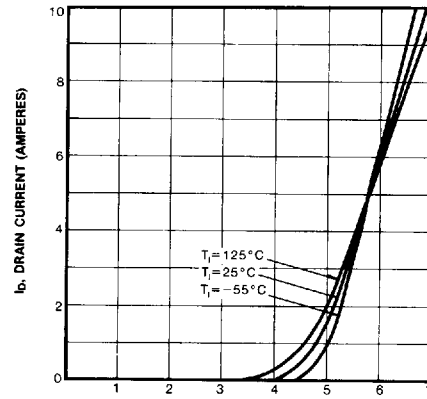
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Symbol	Characteristic	Min	Typ	Max	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	-	-	9.0	A	Modified MOSFET symbol showing the integral reverse P-N junction rectifier 
I_{SM}	Pulse Source Current (Body Diode) (3)	-	-	36	A	
V_{SD}	Diode Forward Voltage (2)	-	-	3.0	V	T_J=25°C, I_S=9.0A, V_{GS}=0V
t_{rr}	Reverse Recovery Time	-	450	-	ns	T_J=25°C, I_F=9.0A, dI_F/dt=100A/μS

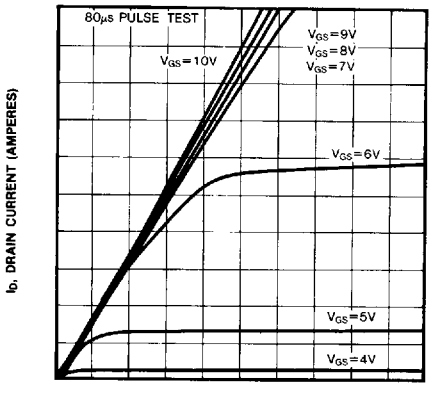
Notes : (1) T_J=25°C to 150°C
(2) Pulse test : Pulse width ≤ 300μs, Duty Cycle ≤ 2%
(3) Repetitive rating : Pulse width limited by max. junction temperature



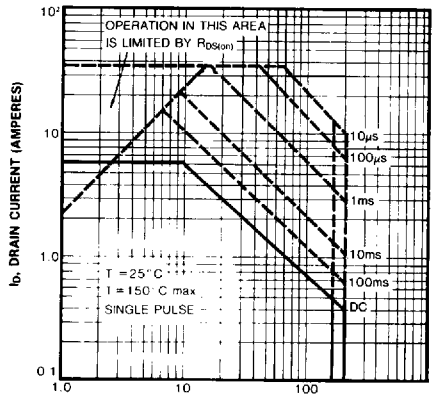
Typical Output Characteristics



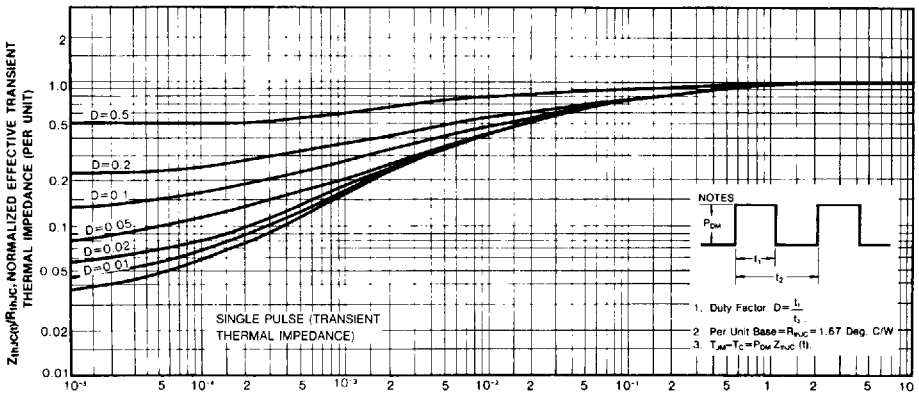
Typical Transfer Characteristics



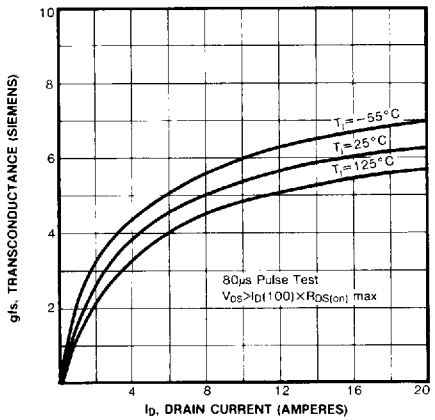
Typical Saturation Characteristics



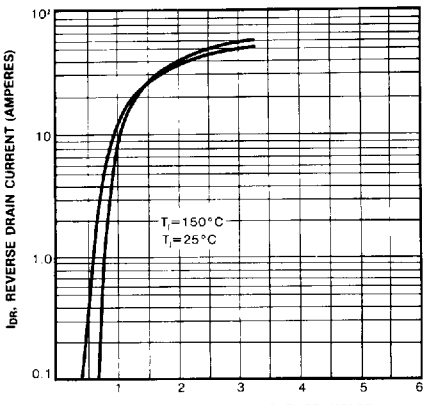
Maximum Safe Operating Area



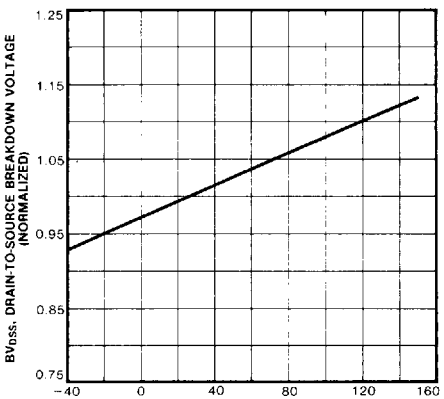
Maximum Effective Transient Thermal Impedance Junction-to-Case Vs. Pulse Duration



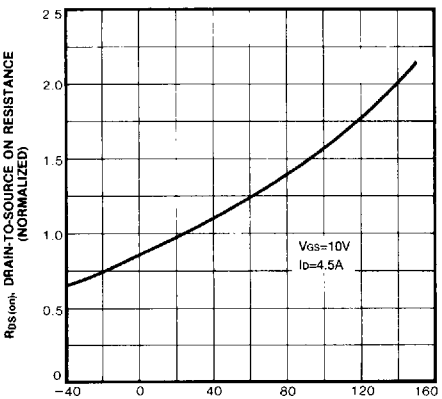
Typical Transcounductance Vs. Drain Current



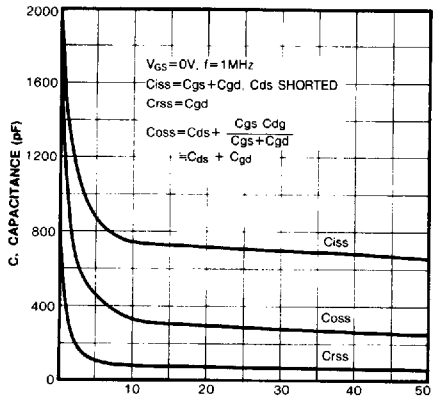
Typical Source—Drain Diode Forward Voltage



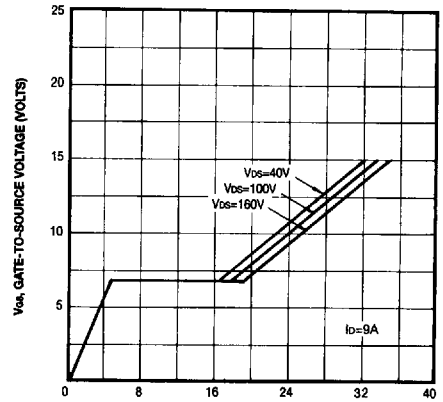
Breakdown Voltage Vs. Temperature



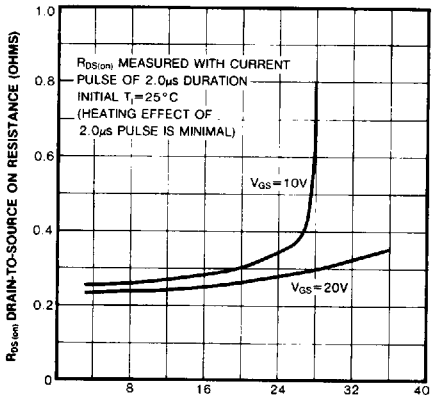
Normalized On-Resistance Vs. Temperature



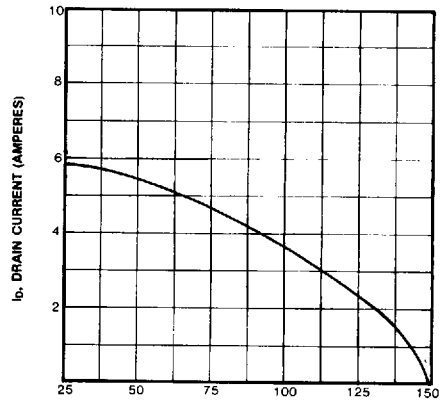
Typical Capacitance Vs. Drain to Source Voltage



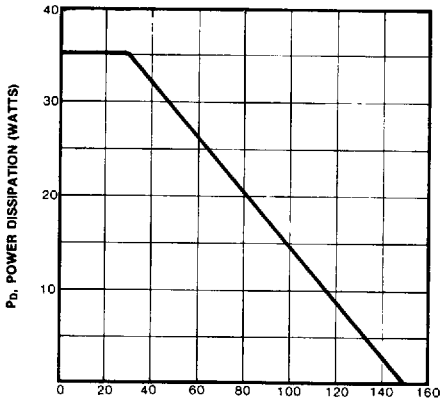
Typical Gate Charge Vs. Gate-to-Source Voltage



Typical On-Resistance Vs. Drain Current



Maximum Drain Current Vs. Case Temperature



Power Vs. Temperature Derating Curve

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