

General Description

The IRF4905S uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. These features combine to make this design an extremely efficient and reliable device for use in a wide variety of other applications.

Features

- P-Channel
- Fast Switching
- RoHS Compliant
- Advanced Process Technology

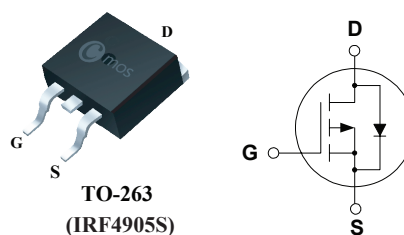
Product Summary

BVDSS	$R_{DS(ON)}$	ID
-60V	7.5m Ω	-90A

Applications

- Inverters
- Motor drive
- DC / DC converter

TO-263 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	-90	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	-63	A
I_{DM}	Pulsed Drain Current	-360	A
EAS	Single Pulse Avalanche Energy ¹	1150	mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	170	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	40	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction-case	---	0.75	$^\circ\text{C}/\text{W}$

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=-250\mu A$	-60	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=-10V$, $I_D=-20A$	---	6.6	7.5	$m\Omega$
		$V_{GS}=-4.5V$, $I_D=-10A$	---	8	10	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=-250\mu A$	-1	---	-2.5	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-55V$, $V_{GS}=0V$	---	---	-1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=-10V$, $I_D=-10A$	---	35	---	S
Q_g	Total Gate Charge	$I_D=-42A$	---	120	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=-44V$	---	30	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=-10V$	---	55	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=-28V$	---	20	---	ns
T_r	Rise Time	$I_D=-42A$	---	100	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_G=2.6\Omega$	---	50	---	
T_f	Fall Time	$V_{GS}=-10V$	---	65	---	
C_{iss}	Input Capacitance	$V_{DS}=-25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	12000	---	pF
C_{oss}	Output Capacitance		---	600	---	
C_{rss}	Reverse Transfer Capacitance		---	450	---	

Diode Characteristics

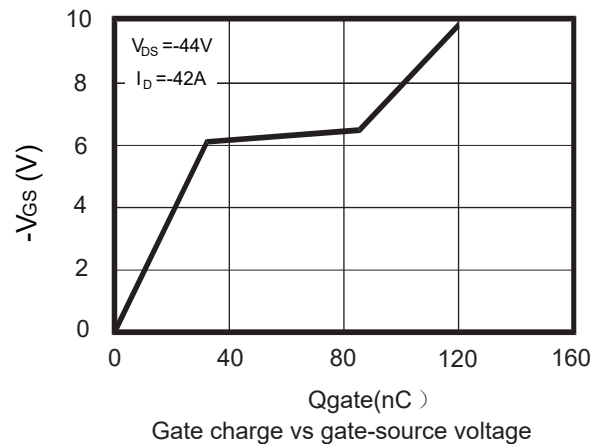
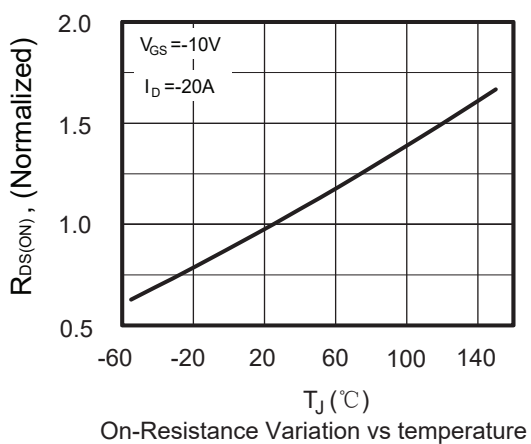
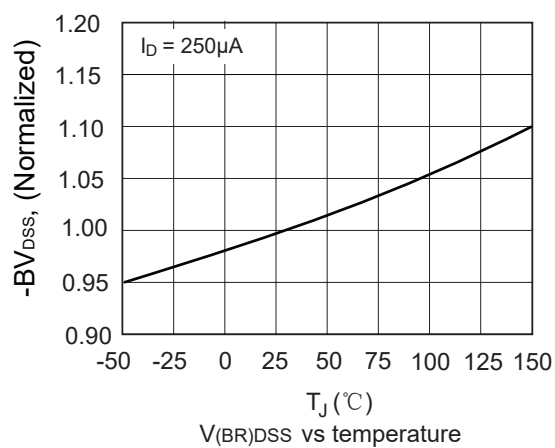
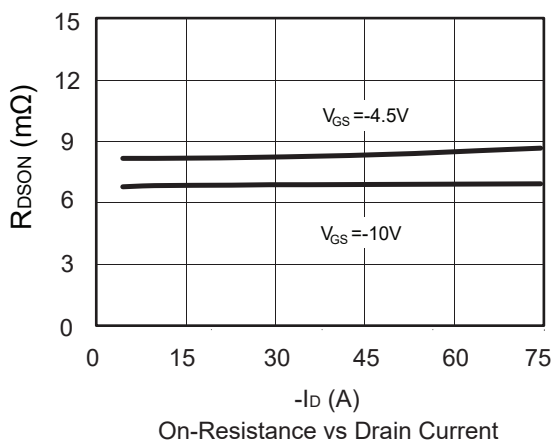
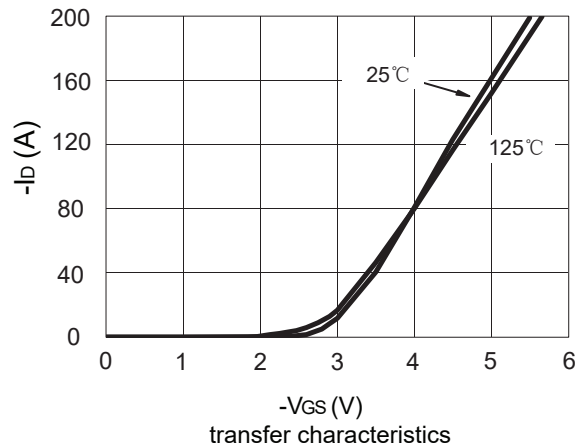
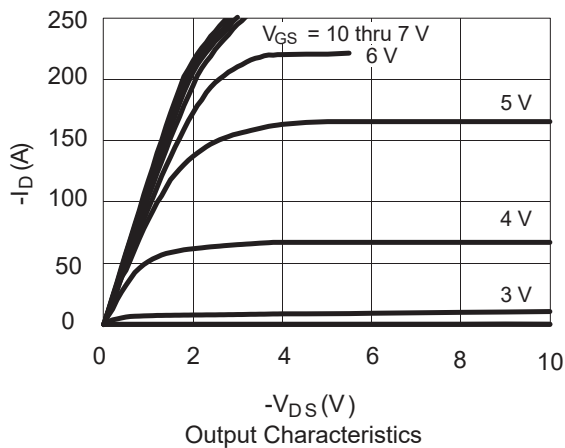
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	-90	A
I_{SM}	Pulsed Source Current		---	---	-360	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=-10A$, $T_J=25^{\circ}\text{C}$	---	-0.76	-1.2	V
t_{rr}	Reverse Recovery Time	$I_F=-42V$, $T_J=25^{\circ}\text{C}$, $V_{DD}=-28V$	---	60	---	ns
Q_{rr}	Reverse Recovery Charge	$di/dt=100\text{ A}/\mu\text{s}$	---	150	---	nC

Notes:

1. The EAS data shows Max. rating . The test condition is $V_{DS}=-30V$, $V_{GS}=-10V$, $L=5\text{mH}$, $I_D=-21.5A$.

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Typical Characteristics



Typical Characteristics

