

SOT-23-3L Plastic-Encapsulate MOSFET

P -Channel MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-100V	270mΩ@-10V	-1.5A
	290mΩ@-4.5V	

General description

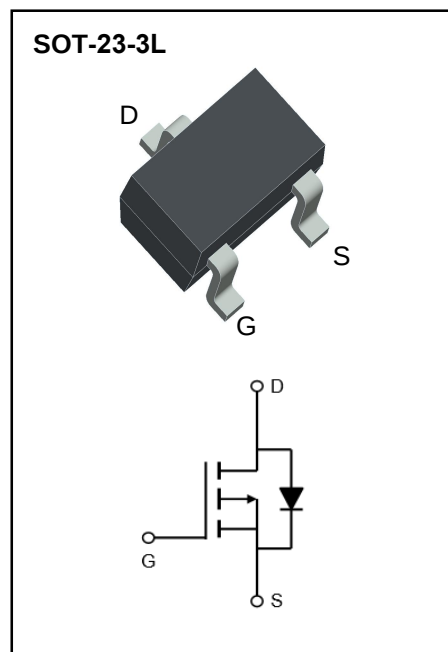
The HD10P05SJ uses advanced trench technology to provide excellent R_{DS} , low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a load switch or in PWM applications.

Features

- TrenchFET Power MOSFET
- Excellent R_{DS} and low Gate Charge

Applications

- Extreme fast switches



Limiting Values (Absolute Maximum Rating)

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	-100	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current (Continuous) *AC	TC=25 °C	I_D	-1.5	A
	TC=70 °C		-0.98	
Drain Current (Pulse) *B		I_{DM}	-7	A
Power Dissipation	TC=25 °C	P_D	1	W
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~150	°C
Maximum Junction-to-Ambient	$t \leq 5s$	R_{thJA}	125	°C/W

Electrical Characteristics (T_A=25°C unless otherwise noted)

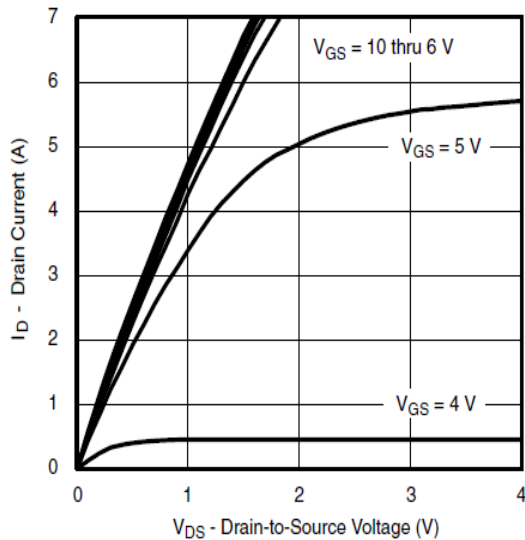
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-100	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -100 V, V _{GS} = 0V	--	--	-1	μA
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _{DS} = -250μA	-1	--	-2.5	V
Gate Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V	--	--	±100	nA
Drain-Source On-state Resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -2A	--	270	350	mΩ
	R _{DS(on)}	V _{GS} = -4.5V, I _D = -1A	--	290	375	mΩ
Diode Forward Voltage	V _{SD}	I _{SD} = -1A , V _{GS} =0V	--	-0.8	-1.2	V
Diode Forward Current *AC	I _S	T _A =25°C	--	--	-1.25	A
Switching						
Total Gate Charge	Q _g	V _{DS} = - 50 V, V _{GS} = - 10 V, I _{DS} = - 2 A	--	18	--	nC
Gate-Source Charge	Q _{gs}		--	4.1	--	nC
Gate-Drain Charge	Q _{gd}		--	2.1	--	nC
Turn-on Delay Time	t _{d (on)}	V _{DS} = - 50 V, V _{GEN} = - 10 V, R _G = 4.5 Ω , R _L =25 Ω , I _{DS} = - 2 A	--	11	--	ns
Turn-on Rise Time	t _r		--	12.5	--	ns
Turn-off Delay Time	t _{d(off)}		--	142	--	ns
Turn-Off Fall Time	t _f		--	44	--	ns
Dynamic						
Input Capacitance	C _{iss}	V _{DS} = -50V,V _{GS} =0V, f=1.0MHz	--	946	--	pF
Output Capacitance	C _{oss}		--	26	--	pF
Reverse Transfer Capacitance	C _{rss}		--	25	--	pF

A: The value of R_{θJA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

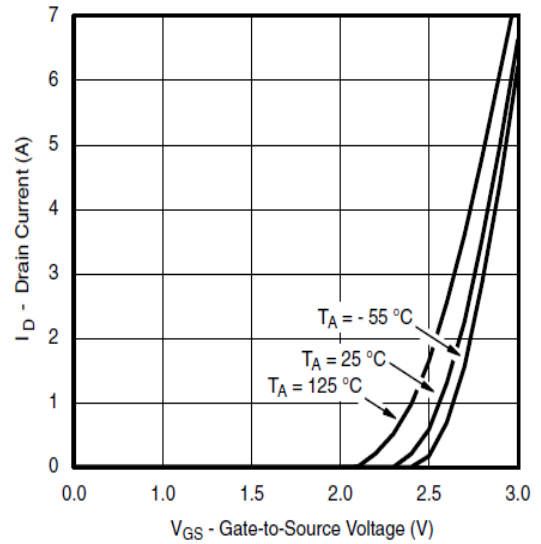
B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the t_s ≤ 10s junction to ambient thermal resistance rating.

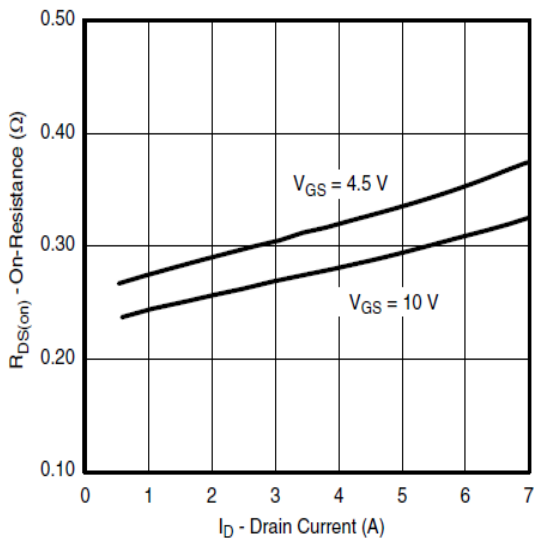
Typical Characteristics



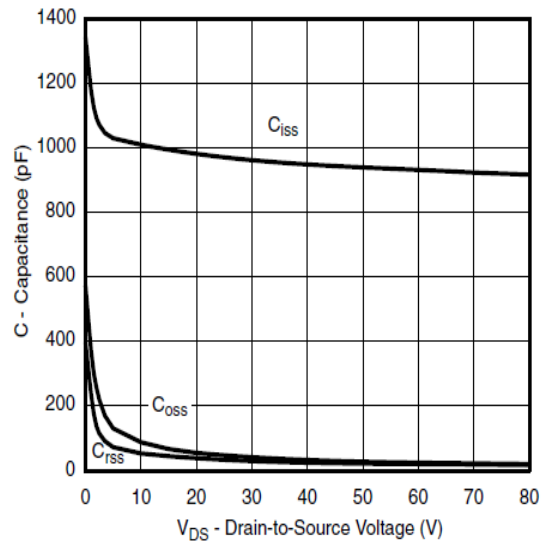
Output Characteristics



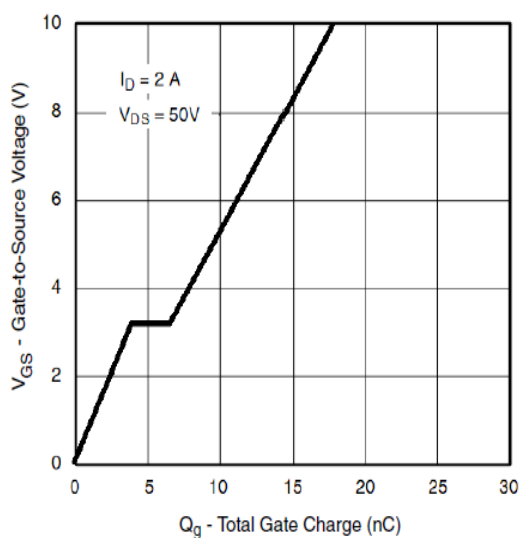
Transfer Characteristics



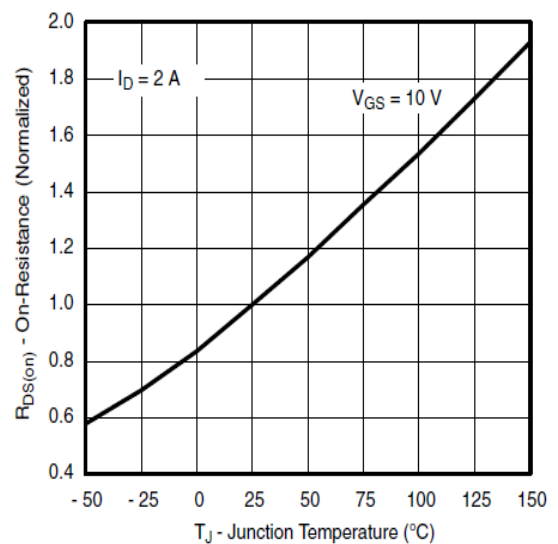
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

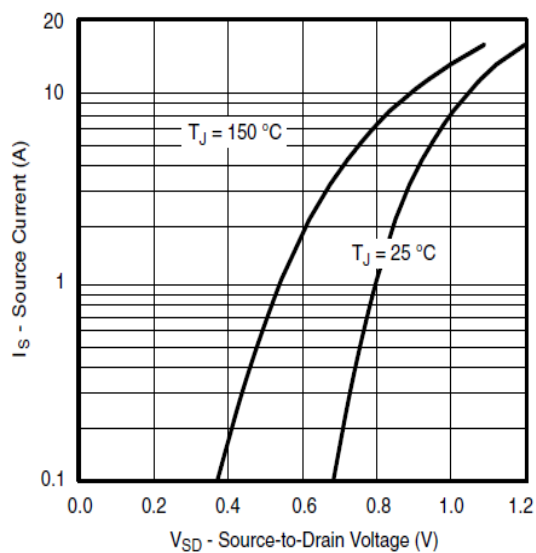


Gate Charge

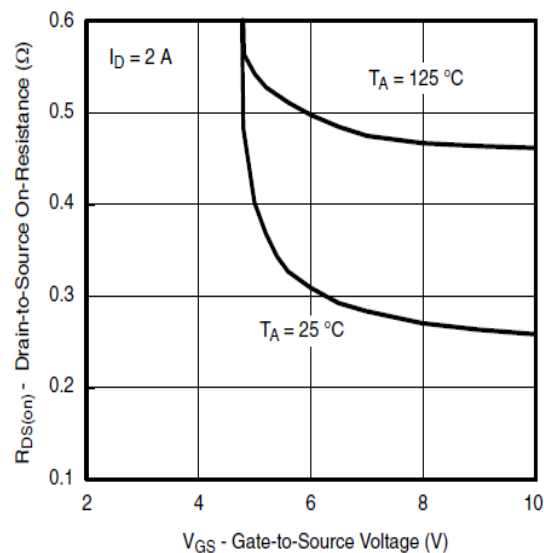


On-Resistance vs. Junction Temperature

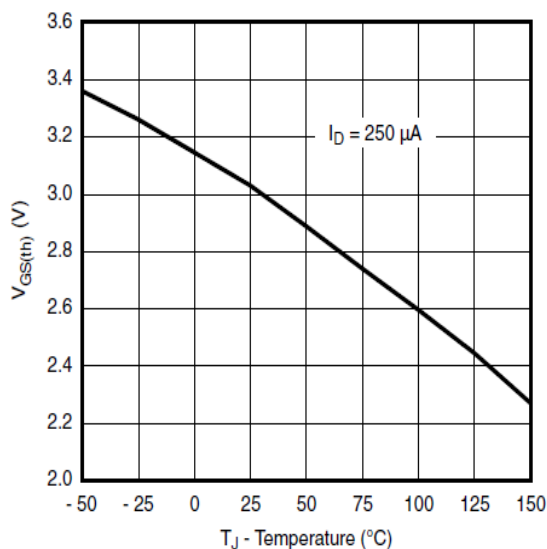
Typical Characteristics



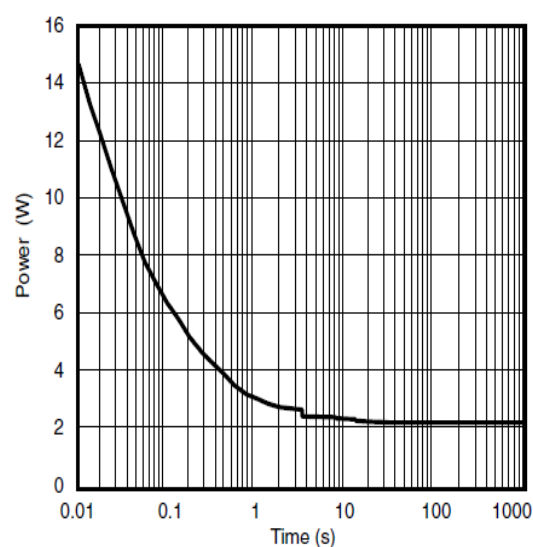
Source-Drain Diode Forward Voltage



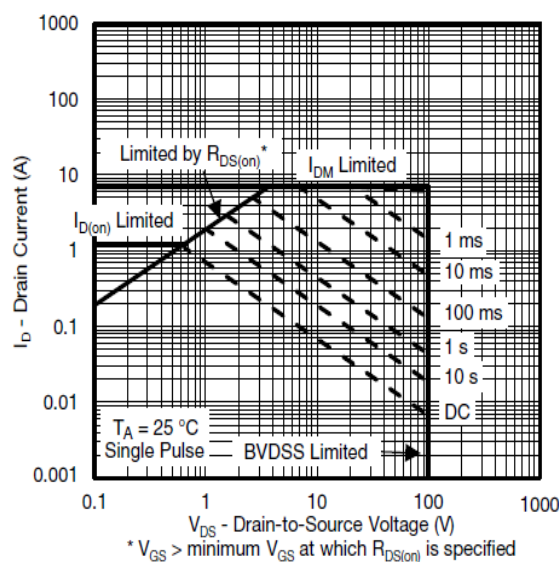
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

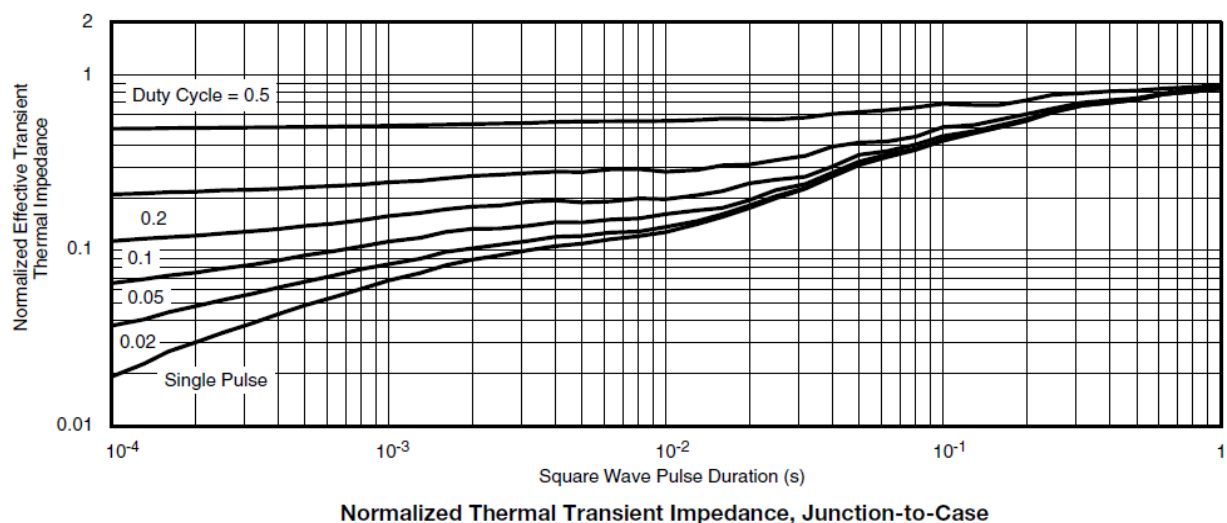
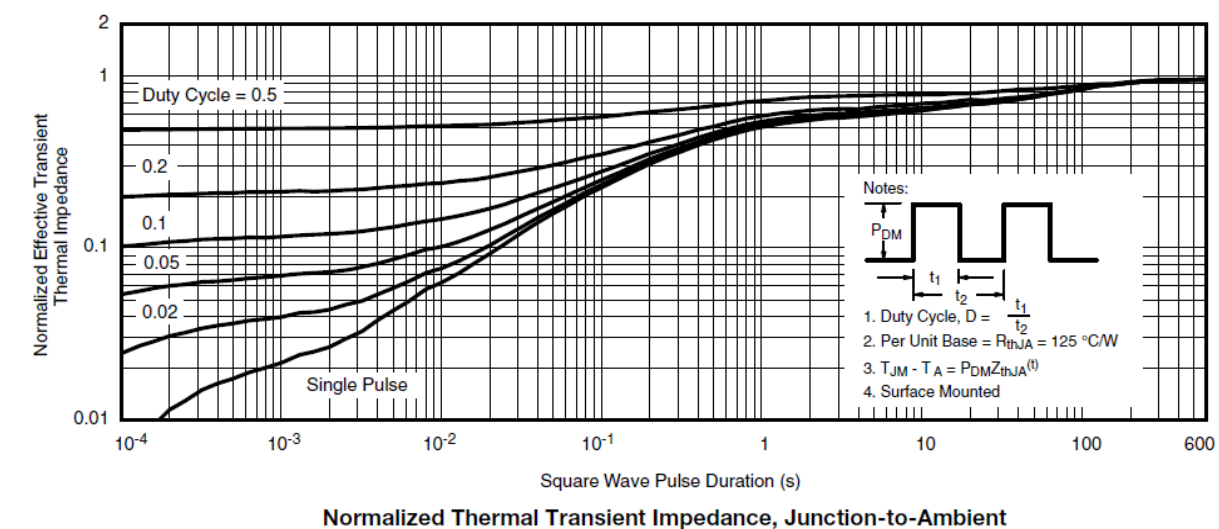


Single Pulse Power, Junction-to-Ambient

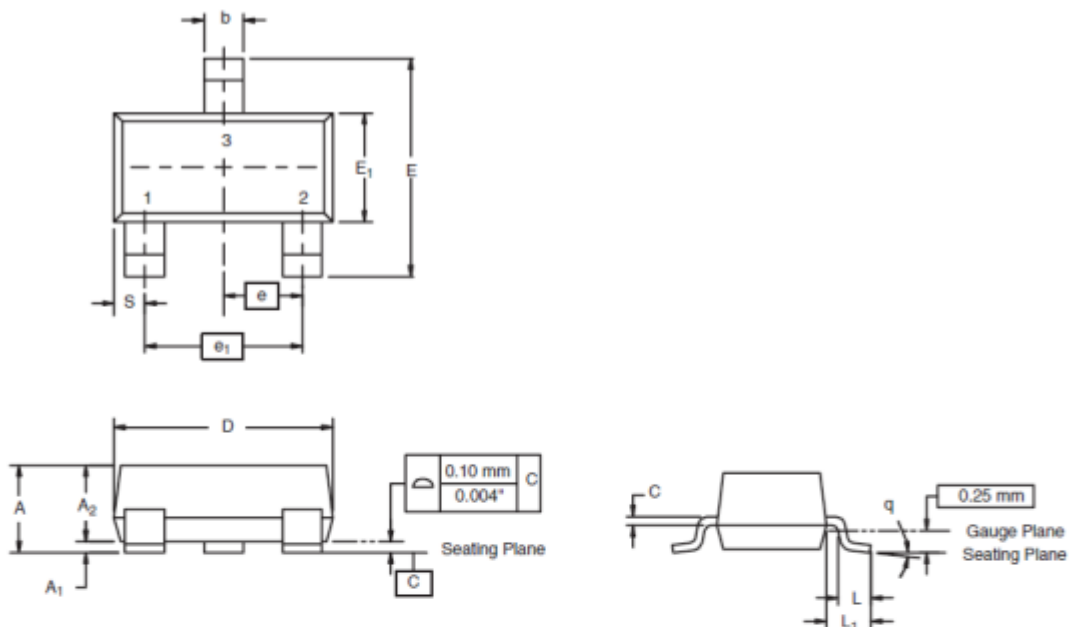


Safe Operating Area, Junction-to-Ambient

Typical Characteristics



SOT-23-3L Package Outline Dimensions



Dim	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	0.89	1.12	0.035	0.044
A ₁	0.01	0.10	0.0004	0.004
A ₂	0.88	1.02	0.0346	0.040
b	0.35	0.50	0.014	0.020
c	0.085	0.18	0.003	0.007
D	2.80	3.04	0.110	0.120
E	2.60	3.00	0.102	0.118
E ₁	1.40	1.80	0.055	0.071
e	0.95 BSC		0.0374 Ref	
e ₁	1.90 BSC		0.0748 Ref	
L	0.40	0.60	0.016	0.024
L ₁	0.64 Ref		0.025 Ref	
S	0.50 Ref		0.020 Ref	
q	3°	8°	3°	8°

NOTICE

JSMD reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JSMD does not assume any liability arising out of the application or use of any product described herein.