Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

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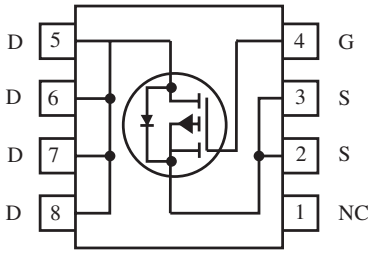
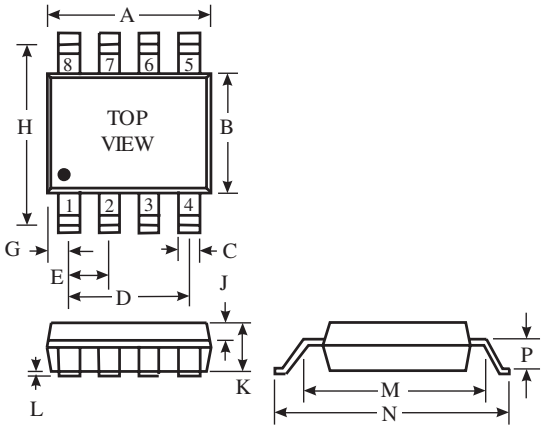
DI9405

SINGLE P-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

Features

- High Cell Density DMOS Technology
- Low On-State Resistance
- High Power and Current Capability
- Fast Switching Speed
- High Transient Tolerance





SO-8		
Dim	**Min**	**Max**
A	3.94	4.19
B	3.20	3.40
C	0.381	0.495
D	2.67	3.05
E	0.89	1.02
G	0.527	0.679
J	0.41 Nominal	
K	0.94	1.09
L	0.025	0.152
M	4.37	4.62
N	4.39	4.70
P	0.939 Nominal	
All Dimensions in mm		

Mechanical Data

- SO-8 Plastic Case
- Terminal Connections: See Outline Drawing and Internal Circuit Diagram above

Maximum Ratings @ T_A = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	-20	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	Note 1a Continuous @ T_A = 25°C Note 1a Continuous @ T_A = 70°C Pulsed @ T_A = 25°C	I_D	±4.3 ±3.3 ±20	A
Maximum Power Dissipation	Note 1a Note 1b Note 1c	P_d	2.5 1.2 1.0	W
Operating and Storage Temperature Range		T_j, T_{STG}	-55 to +150	°C

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	Note 1a	$R_{\Theta JA}$	50	°C/W
Thermal Resistance, Junction-to-Case	Note 1	$R_{\Theta JC}$	25	°C/W

Notes: 1. $R_{\Theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance ($R_{\Theta JC}$ + $R_{\Theta CA}$) where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\Theta JC}$ in this instance is 25°C/W but is dependent on the specific circuit board thermal design.

1a. With 1 in^2 of 2 oz. copper mounting pad $R_{\Theta JA}$ = 50°C\W.

1b. With 0.04 in^2 of 2 oz. copper mounting pad $R_{\Theta JA}$ = 105°C\W.

1c. With 0.006 in^2 of 2 oz. copper mounting pad $R_{\Theta JA}$ = 125°C\W.

Electrical Characteristics @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	-20	—	—	V	V_{GS} = 0V, I_D = -25 µA
Zero Gate Voltage Drain Current T_j = 55°C	I_{DSS}	—	—	-2.0 -25	µA	VDS = -16V, V_{GS} = 0V
Gate-Body Leakage, Forward	I_{GSSF}	—	—	100	nA	V_{GS} = 20V, V_{DS} = 0V
Gate-Body Leakage, Reverse	I_{GSSR}	—	—	-100	nA	V_{GS} = -20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 2)						
Gate Threshold Voltage T_j = 125°C	$V_{GS(th)}$	-0.5 -0.85	-1.65 —	-3.0 -2.6	V	VDS = V_{GS}, I_D = -250µA
Static Drain-Source On-Resistance T_j = 125°C T_j = 125°C	$R_{DS\ (ON)}$	—	0.053 0.075 0.080 0.120	0.10 0.15 0.16 0.24	Ω	V_{GS} = -10V, I_D = -2.0A V_{GS} = -10V, I_D = -2.0A V_{GS} = -4.5V, I_D = -2.0A V_{GS} = -4.5V, I_D = -2.0A
On-State Drain Current	$I_{D(ON)}$	-2.0 -5.0	—	—	A	V_{GS} = -10V, V_{DS} = -5.0V V_{GS} = -4.5V, V_{DS} = -5.0V
Forward Transconductance	g_{FS}	—	9.0	—	℧	V_{DS} = -15V, I_D = -4.3A
DYNAMIC CHACTERISTICS						
Input Capacitance	C_{ISS}	—	1425	—	pF	V_{DS} = -10V, V_{GS} = 0V f = 1.0MHz
Output Capacitance	C_{OSS}	—	850	—	pF	
Reverse Transfer Capacitance	C_{RSS}	—	430	—	pF	
SWITCHING CHARACTERISTICS (Note 2)						
Turn-On Delay Time	$t_{D(ON)}$	—	17	30	ns	V_{DD} = -10V, I_D = -1.0A V_{GEN} = -10V, R_{GEN} = 6.0Ω
Turn-On Rise Time	t_r	—	24	80	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	56	200	ns	
Turn-Off Fall Time	t_f	—	30	200	ns	
Total Gate Charge	Q_g	—	—	40	nC	V_{DS} = -10V. I_D = -4.3A. V_{GS} = -10V
Gate-Source Charge	Q_{gs}	—	—	5.0	nC	
Gate-Drain Charge	Q_{gd}	—	—	25	nC	
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Max Continuous Drain-Source Diode Forward Current	I_S	—	—	-2.2	A	
Drain-Source Diode Forward Voltage	V_{SD}	—	-0.78	-1.6	V	V_{GS} = 0V, I_S = -1.25A (Note 2)
Reverse Recovery Time	t_{rr}	—	—	80	ns	V_{GS} = 0V, I_F = -1.25A, dI_F/dt = 100A/µs

Notes: 2. Pulse Test: Pulse width ≤ 300 µs, duty cycle ≤ 2%.

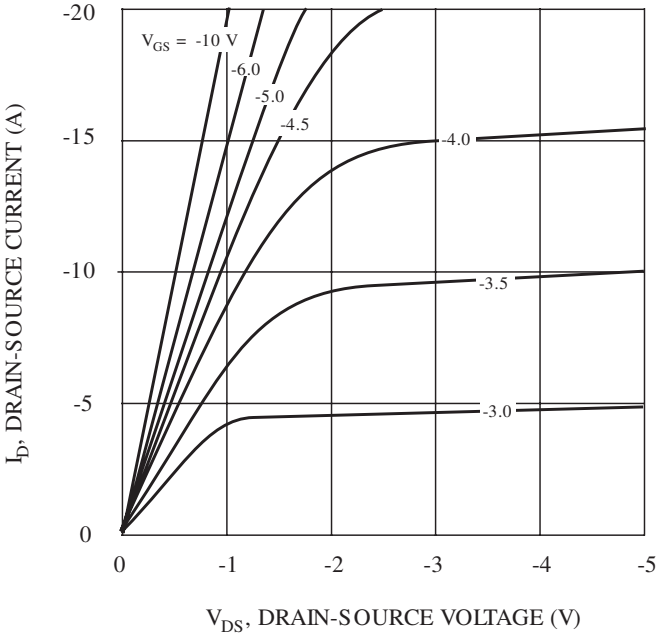


Fig. 1, On-Region Characteristics

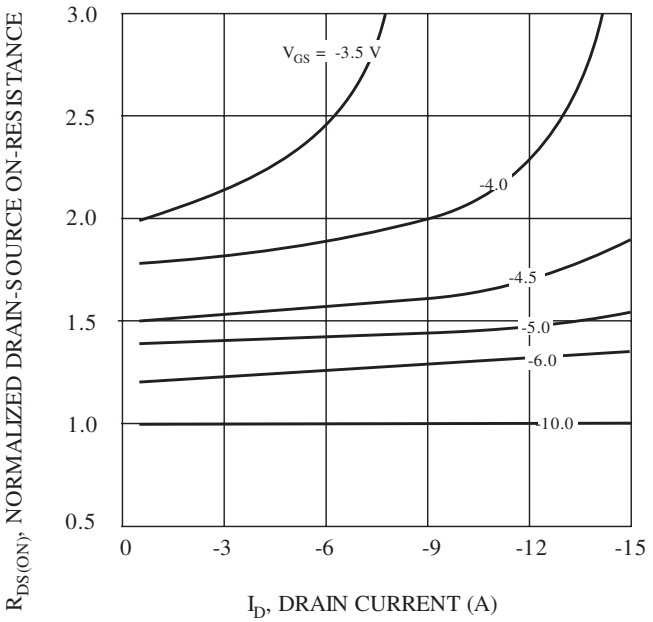


Fig. 2, On-Resistance vs Gate Voltage & Drain Current

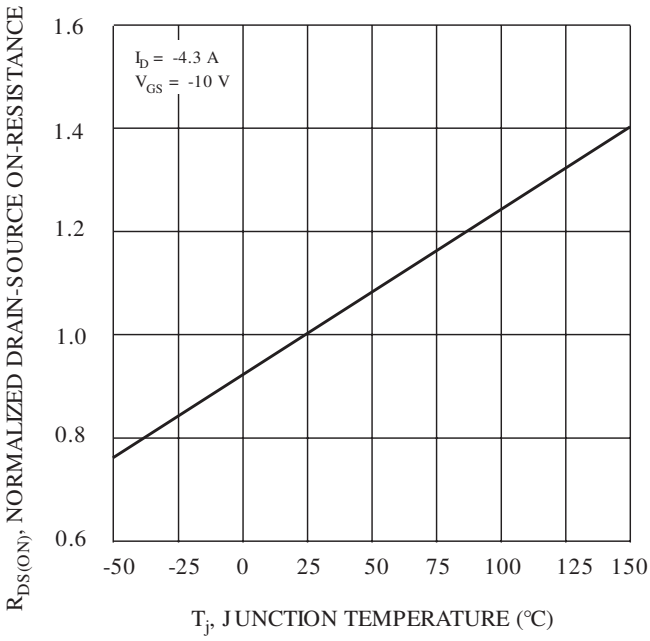


Fig. 3, On-Resistance vs Junction Temperature

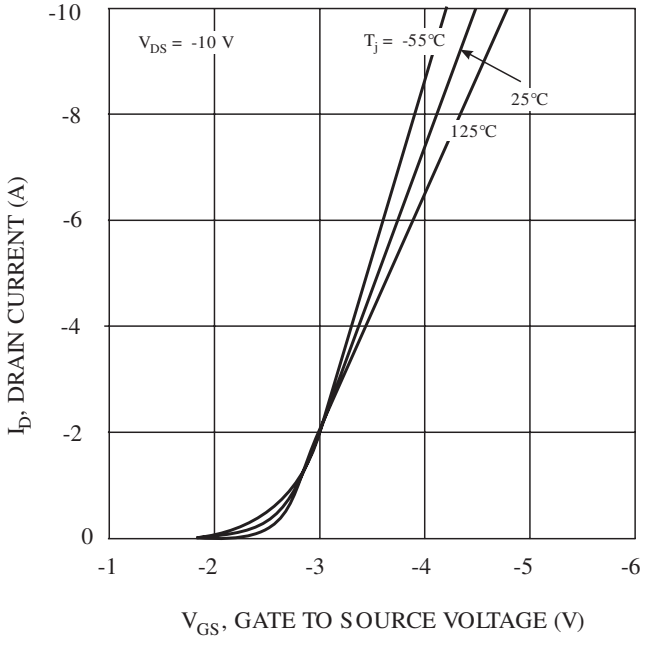


Fig. 4, Transfer Characteristics

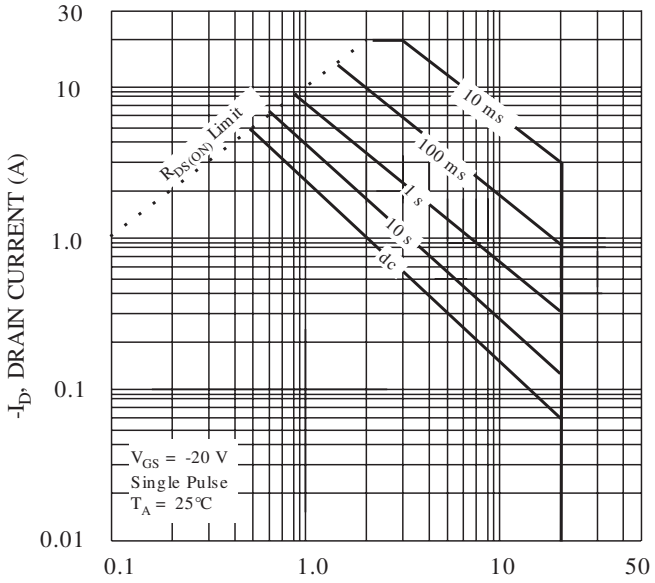


Fig. 5, Maximum Safe Operating Area

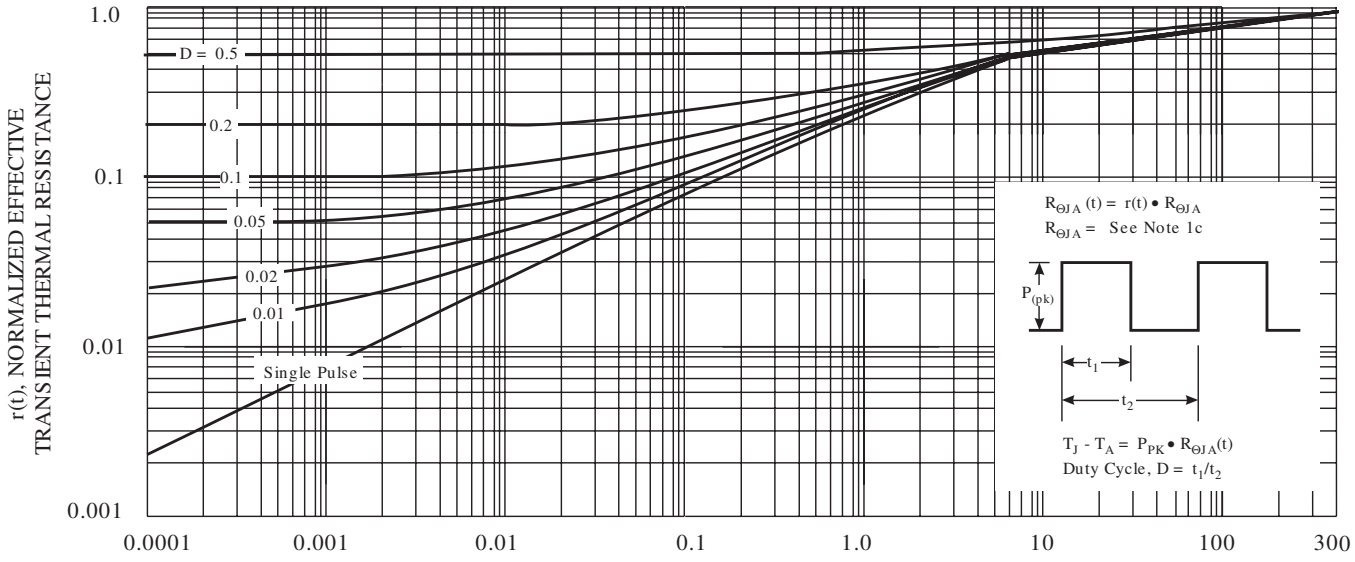


Fig. 6, Typical Normalized Transient Thermal Impedance Curves

Remark: Thermal characterization performed under conditions of Note 1c. Better thermal design such as shown in Notes 1a and 1b or 1d will offer lower $R_{\Theta JA}$ values and allow junction to reach thermal equilibrium sooner.