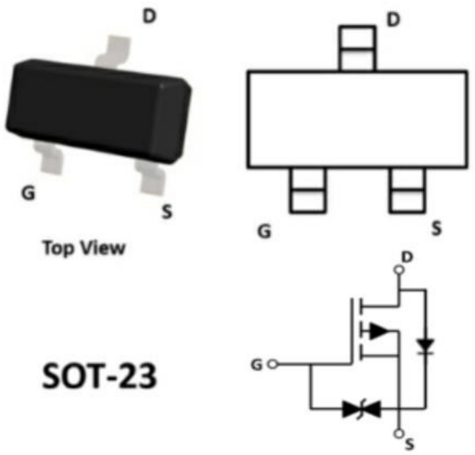
DP3415
P-Channel Enhancement Mode Field Effect Transistor

General description
P-Channel Enhancement Mode Field Effect Transistor

Features:
- V_{DS} (V) =-20V
- I_D =-5 A (V_{GS} =-4.5V)
- $R_{DS(ON)}$ < 42mΩ (V_{GS} =-4.5V)
- $R_{DS(ON)}$ < 60mΩ (V_{GS} =-2.5V)
- $R_{DS(ON)}$ < 120mΩ (V_{GS} =-1.8V)
- ESD Protected UP to 2.0KV(HBM)
- Trench Power LV MOSFET technology
- High Density Cell Design for Low RDS(ON)
- High Speed switching

Applications
- Battery protection
- Load switch
- Power management



Device Marking:

Device Type	Marking
DP3415	3415E or AFXL*

Absolute Maximum Ratings (TA=25℃unless otherwise noted)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±12	
Continuous Drain Current	T_A=25°C	I_D	-5	A
	T_A=70°C		-4.2	
Pulsed Drain Current		I_{DM}	-23	
Power Dissipation	T_A=25°C	P_D	1.3	W
Thermal Resistance.Junction- to-Ambient	Steady-State	R_{thJA}	96	℃/W
Junction Temperature		T_J	150	℃
Junction Storage Temperature Range		T_{stg}	-55 to 150	

Electrical Characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=-250μA	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V,V_{GS}=0V,T_C=25℃			-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±10V, V_{DS}=0V		±2.5	±10	μA
		V_{GS}= ±8V, V_{DS}=0V		±900	±2000	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=-250μA	-0.50	-0.67	-0.95	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= -4.5V, I_D=-4.0A		35	42	mΩ
		V_{GS}= -2.5V, I_D=-3.0A		47	60	
		V_{GS}= -1.8V, I_D=-1.5A		64	120	
Diode Forward Voltage	V_{SD}	I_S=-5A,V_{GS}=0V		-0.8	-1.2	V
Maximum Body-Diode Continuous Current	I_S				-5	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=-10V,V_{GS}=0V,f=1MHZ		940		pF
Output Capacitance	C_{oss}			219		
Reverse Transfer Capacitance	C_{rss}			116		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=-4.5V,V_{DD}=-10V,I_D=-4A		7.2		nC
Gate Source Charge	Q_{gs}			1.2		
Gate Drain Charge	Q_{gd}			1.6		
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=-4.5V,V_{DD}=-10V, R_L=2.5Ω, R_{GEN}=3Ω		15		ns
Turn-on Rise Time	t_r			63		
Turn-off Delay Time	$t_{D(off)}$			21		
Turn-off Fall Time	t_f			12		

A. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.
B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Performance Characteristics

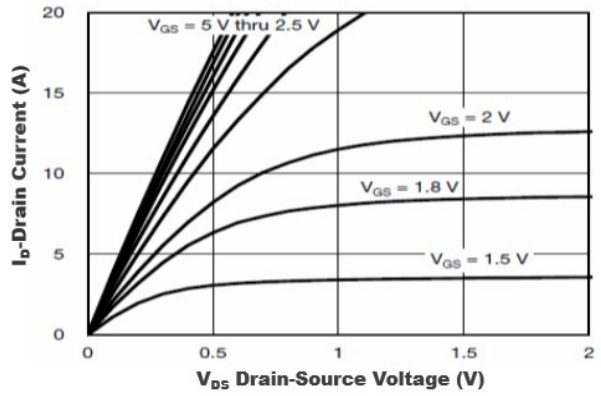


Figure1. Output Characteristics

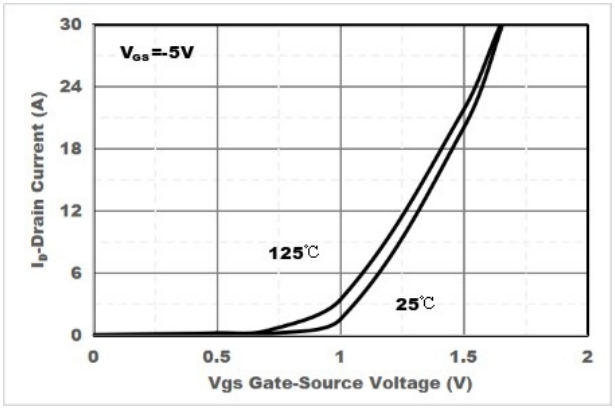


Figure2. Transfer Characteristics

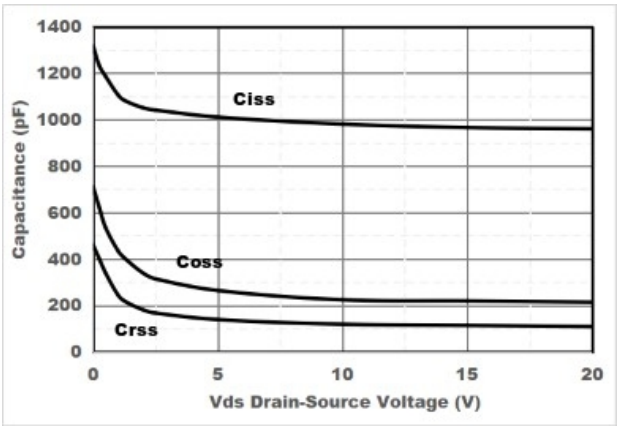


Figure3. Capacitance Characteristics

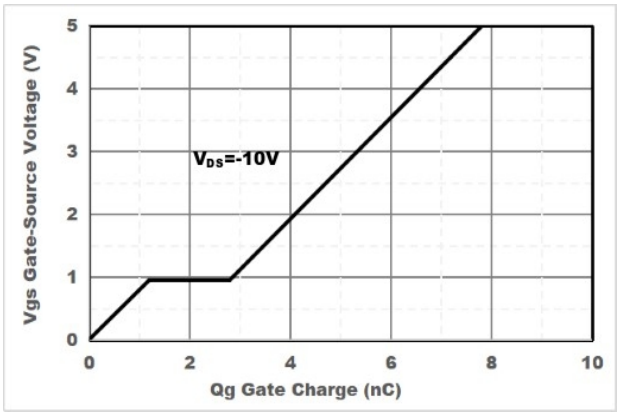


Figure4. Gate Charge

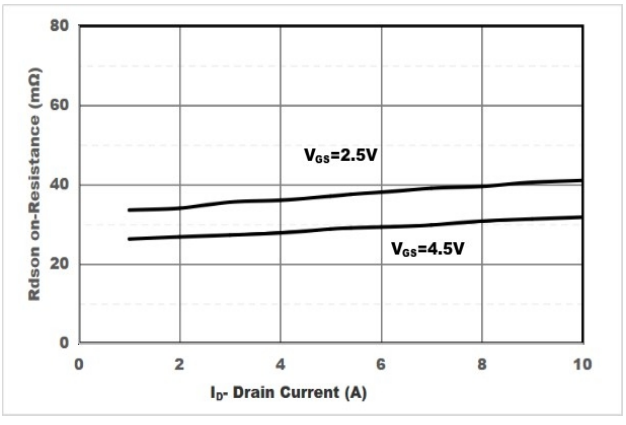


Figure5. Drain-Source on Resistance

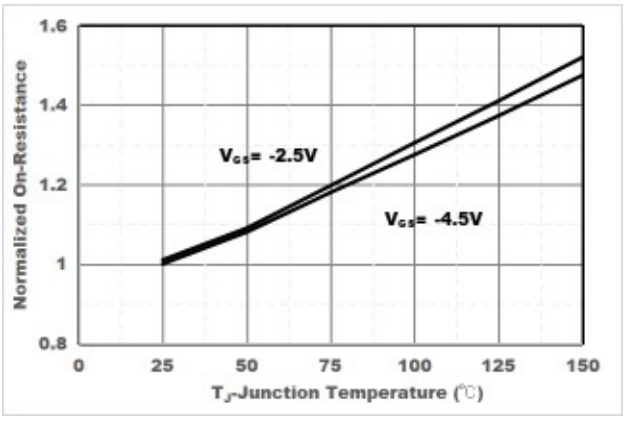


Figure6. Drain-Source on Resistance

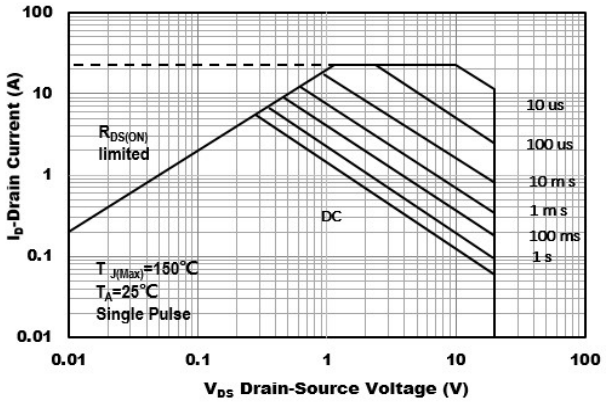


Figure7. Safe Operation Area

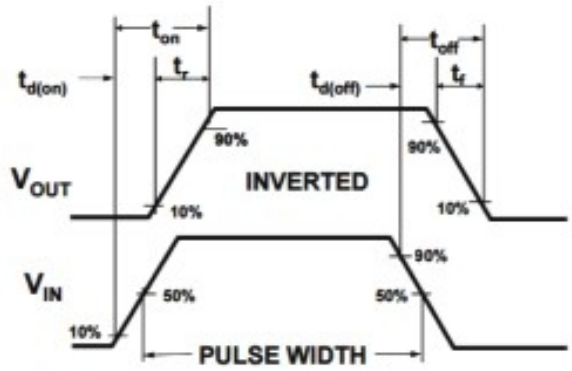
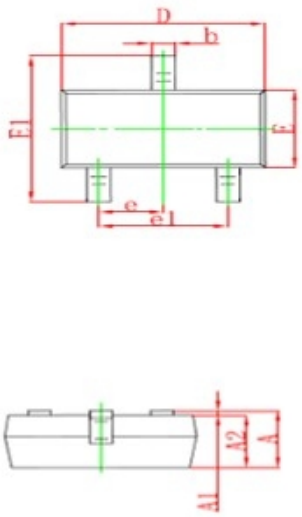


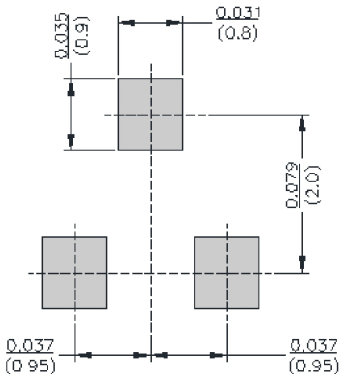
Figure8. Switching wave

SOT-23 Package information



Symbol	Dimentions in Millimeter		Dimentions in Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950Type		0.037Type	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.220REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Important Notice and Disclaimer

DOESHARE has used reasonable care in preparing the information included in this document, but DOESHARE does not warrant that such information is error free. DOESHARE assumes no liability whatsoever for any damages incurred by you resulting from errors in or omissions from the information included herein.

DOESHARE no warranty, representation or guarantee regarding the documents, circuits and products specification, DOESHARE reservation rights to make changes for any documents, products, circuits and specifications at any time without notice.

Purchasers are solely responsible for the choice, selection and use of the DOESHARE products and services described herein, and DOESHARE assumes no liability whatsoever relating to the choice, selection or use of the products and services described herein.

No license, express or implied, by implication or otherwise under any intellectual property rights of DOESHARE.

Resale of DOESHARE products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by DOESHARE for the DOESHARE product or service described herein and shall not create or extend in any manner whatsoever, any liability of DOESHARE.