

DP3415

P-Channel Enhancement Mode Field Effect Transistor

General description

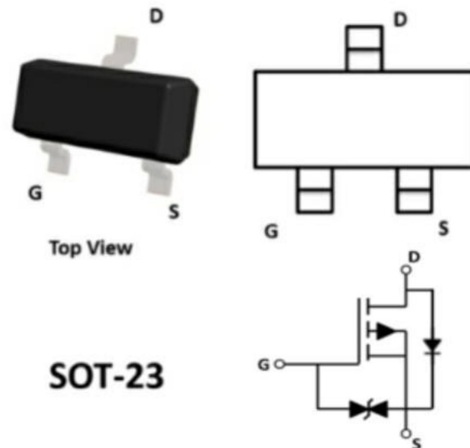
P-Channel Enhancement Mode Field Effect Transistor

Features:

- V_{DS} (V) = -20V
- I_D = -4 A (V_{GS} = -4.5V)
- $R_{DS(ON)} < 50m\Omega$ (V_{GS} = -4.5V)
- $R_{DS(ON)} < 60m\Omega$ (V_{GS} = -2.5V)
- $R_{DS(ON)} < 73m\Omega$ (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



SOT-23

Device Marking:

Device Type	Marking
DP3415	3415 or R15

V1, Fed-10-2023

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Parameters	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current	I_D	-4.0	A
Power Dissipation	P_D	350	mW
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	-50-+150	°C
Thermal Resistance From Junction to Ambient	$R_{\theta JA}$	357	°C/W

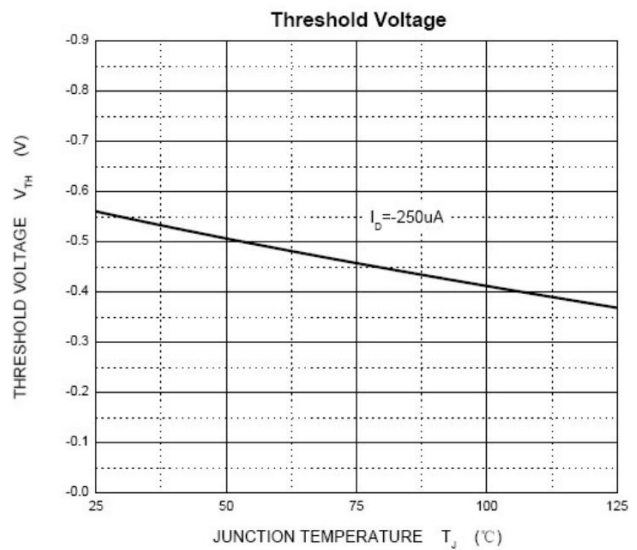
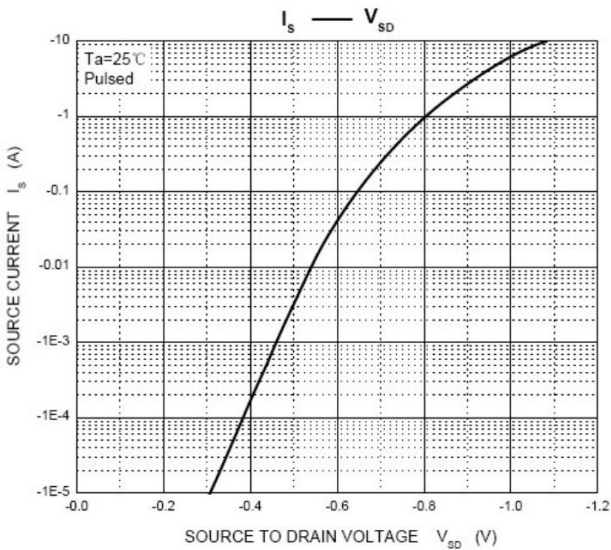
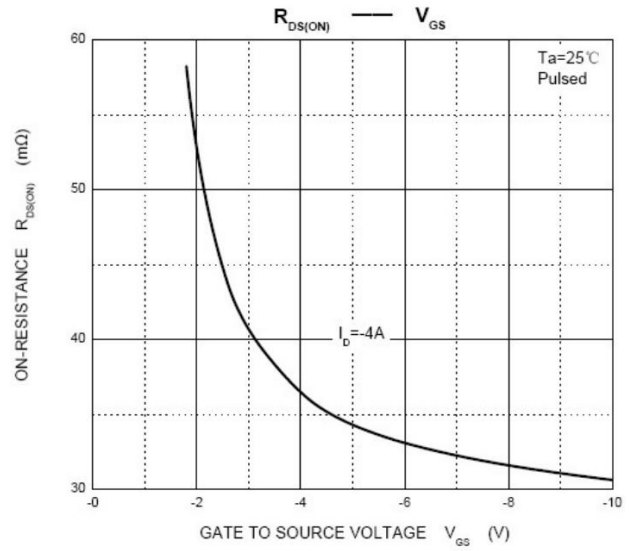
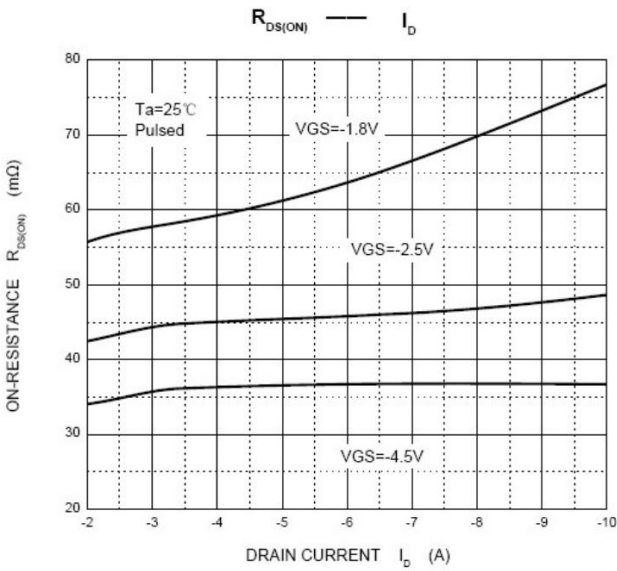
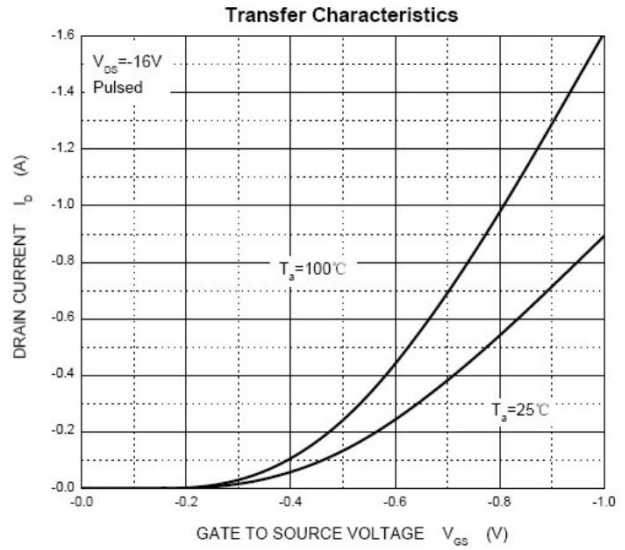
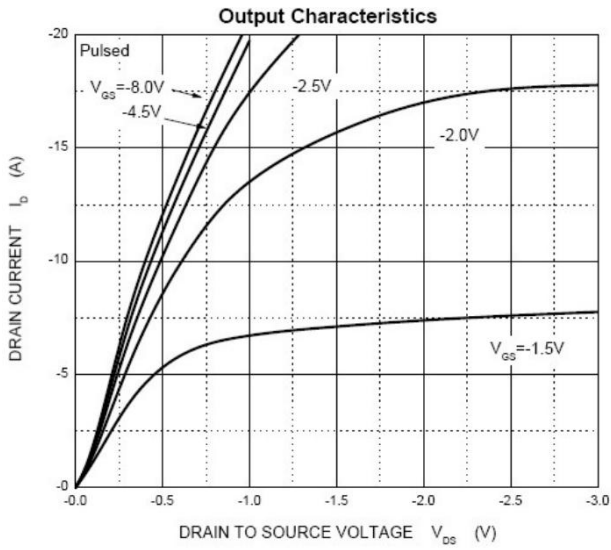
Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbols	Test Condition	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	V(BR)DSS	V _{GS} =0V, I _D =-250uA	-20			V
Gate-Threshold voltage	V_{GS}(th)	V _{DS} =V _{GS} , I _D =-250uA	-0.3	-0.56	-1.0	V
Gate-body Leakage	I_{GSS}	V _{DS} =0V, V _{GS} =±8V			±10	uA
Zero Gate Voltage Drain current	I_{DSS}	V _{DS} =0V, V _{GS} =±4.5V			±1	
Drain-Source On-Resistance ^(a)	R_{DS(ON)}	V _{DS} =-16V, V _{GS} =0V			-1	mΩ
		V _{GS} =-4.5V, I _D =-4A		37	50	
		V _{GS} =-2.5V, I _C =-4A		45	60	
		V _{GS} =-1.8V, I _C =-2A		56	73	
Forward trans conductance ^(b)	g_{fs}	V _{DS} =-5V, I _D =-4A	8			S
Dynamic^(c)						
Input capacitance	C_{iss}	V _{DS} =-10V, V _{GS} =0V, f=1MHz		1450		pF
Output capacitance	C_{oss}			205		
Reverse Transfer capacitance	C_{rss}			160		
Total gate charge	Q_g	V _{DS} =-10V, V _{GS} =-4.5V, I _D =-4A		17.2		nC
Gate-source charge	Q_{gs}			1.3		
Gate-drain charge	Q_{gd}			4.5		
Gate resistance	R_g	V _{DS} =0V, V _{GS} =0V, f=1MHz		6.5		Ω
Turn-on Time	t_{d(on)}	V _{DD} =-10V, R _L =2.5Ω, V _{GEN} =-4.5V, R _{GEN} =3Ω		9.5		ns
Rise time	t_r			17		
Turn-off Time	t_{d(off)}			94		
Fall time	t_f			35		
Drain-source body diode characteristics						
Body diode voltage ^(b)	V_{SD}	I _S =-1A, V _{GS} =0V			-1.0	V

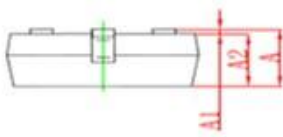
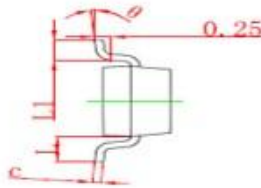
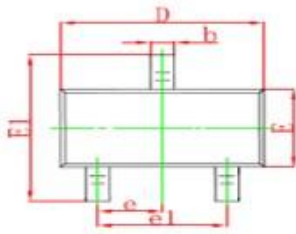
Notes

- Repetitive rating, pulse width limited by junction temperature.
- Pulse Test: Pulse Width ≤300us, Duty Cycle ≤2%.
- These parameters have no way to verify.

Typical Performance Characteristics

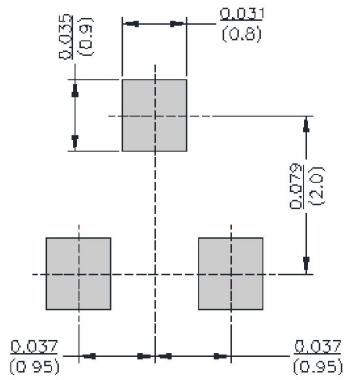


SOT-23 Package information



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



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