

P3415EL

20V P-Channel Enhancement-Mode MOSFET

1. FEATURES

- $V_{DS} = -20V$
- $R_{DS(ON)}, V_{GS}@-4.5V, I_{DS}@-4A=60m\Omega$
- $R_{DS(ON)}, V_{GS}@-2.5V, I_{DS}@-4A=75m\Omega$
- $R_{DS(ON)}, V_{GS}@-1.8V, I_{DS}@-2A=85m\Omega$
- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- ESD Protected

2. APPLICATIONS

- Advanced trench process technology
- High density cell design for ultra low on-resistance.

3. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
P3415EL	P15	3000/Tape&Reel

4. MAXIMUM RATINGS($T_a = 25^\circ C$)

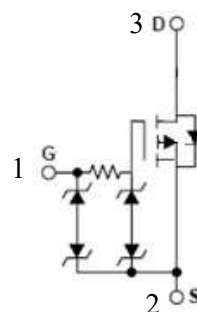
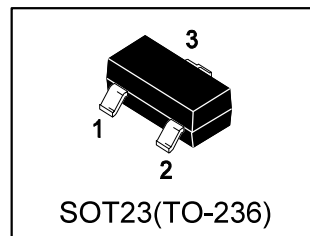
Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-to-Source Voltage – Continuous	V_{GS}	± 8	V
Drain Current			A
– Continuous $T_a = 25^\circ C$	I_D	-4	
– Pulsed (Note 1)	I_{DM}	-30	

5. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Power Dissipation	PD	1	W
Thermal Resistance, Junction-to-Ambient(Note 2)	$R_{\theta JA}$	150	$^\circ C/W$
Junction and Storage temperature	T_J, T_{stg}	$-55 \sim +150$	$^\circ C$

1.Repetitive Rating: Pulse width limited by the maximum junction temperature.

2.1-in² 2oz Cu PCB board.



6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

STATIC CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain–Source Breakdown Voltage (VGS = 0, ID = -250μA)	VBRDSS	-20	-	-	V
Zero Gate Voltage Drain Current (VGS = 0, VDS = -16 V)	IDSS	-	-	-1	μA
Gate–Body Leakage Current, Forward (VGS = 8 V)	IGSSF	-	-	10	μA
Gate–Body Leakage Current, Reverse (VGS = - 8 V)	IGSSR	-	-	-10	μA
Gate Threshold Voltage (VDS = VGS, ID = -250μA)	VGS(th)	-0.3	-	-1.0	V
Static Drain–Source On–State Resistance (VGS = -4.5V, ID = -4A) (VGS = -2.5V, ID = -4A) (VGS = -1.8V, ID = -2.0A)	RDS(on)	- - -	- - -	60 75 85	mΩ

DYNAMIC CHARACTERISTICS(Note 3)

Total Gate Charge (VDS=-10V, ID = -4A, VGS = -4.5V)	Qg	-	10.9	-	nC
Gate-Source Charge (VDS=-10V, ID = -4A, VGS = -4.5V)	Qgs	-	1.62	-	nC
Gate-Drain Charge (VDS=-10V, ID = -4A, VGS = -4.5V)	Qgd	-	3.4	-	nC
Input Capacitance (VDS = -10V, f=1.0MHz, VGS = 0V)	Ciss	-	1091	-	pF
Output Capacitance (VDS = -10V, f=1.0MHz, VGS = 0V)	Coss	-	93	-	pF
Reverse Transfer Capacitance (VDS = -10V, f=1.0MHz, VGS = 0V)	Crss	-	88	-	pF

SWITCHING CHARACTERISTICS

Turn-On Delay Time	(VDD = -10V, RL=10Ω ID = -1A, VGEN = -4.5V, RG = 3.1Ω)	td(on)	-	48	-	ns
Rise Time		tr	-	98	-	
Turn-Off Delay Time		td(off)	-	642	-	
Fall Time		tf	-	282	-	

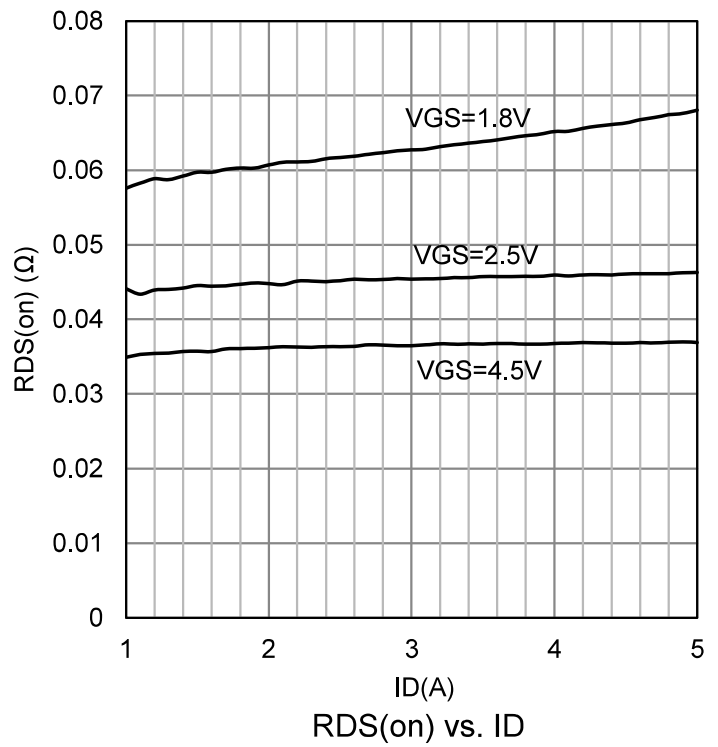
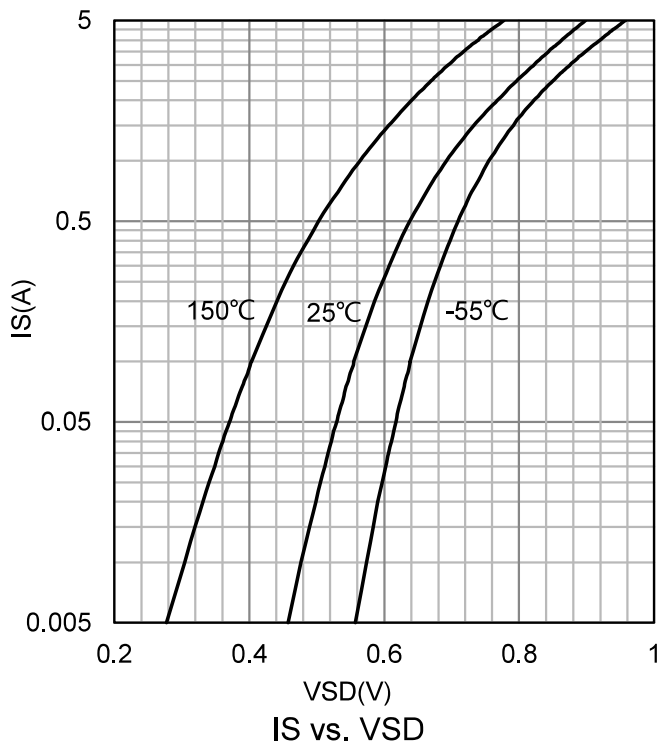
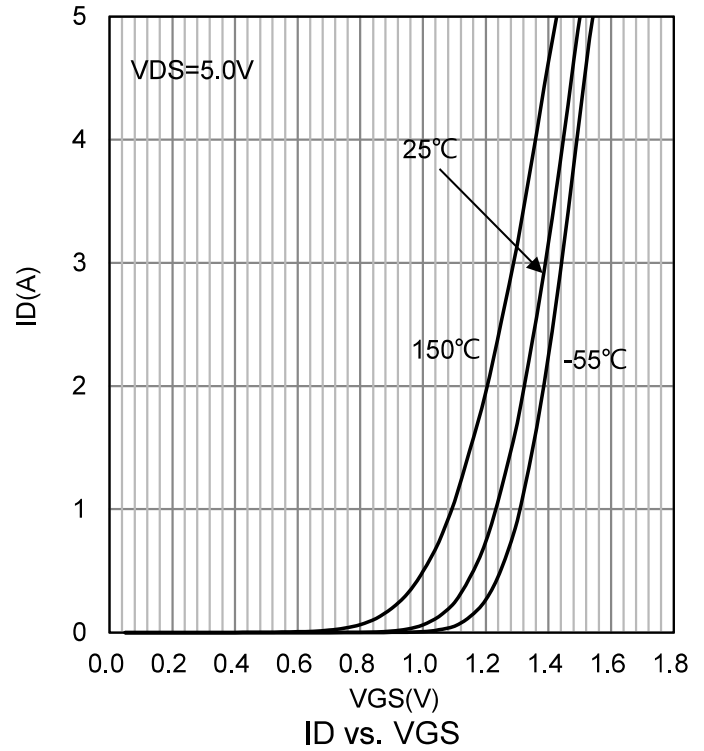
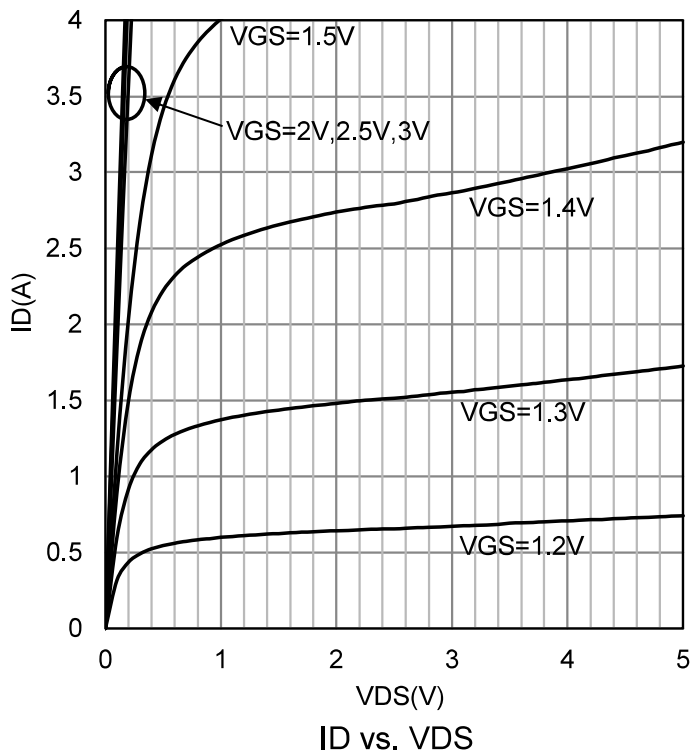
SOURCE–DRAIN DIODE CHARACTERISTICS

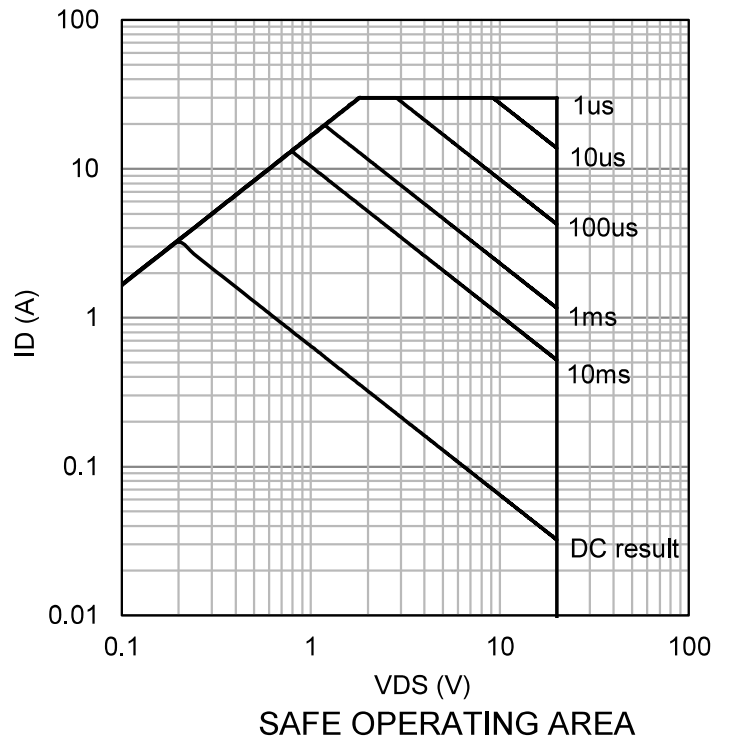
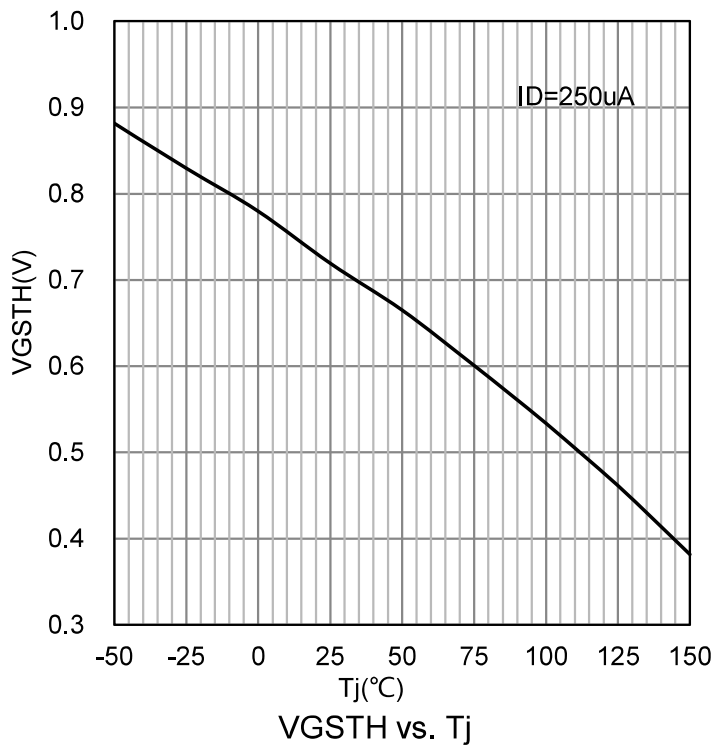
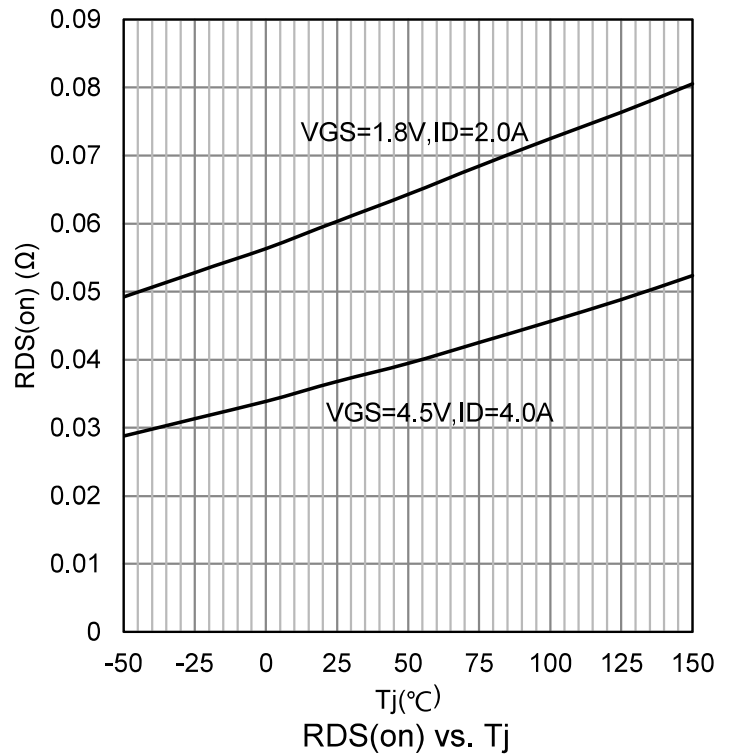
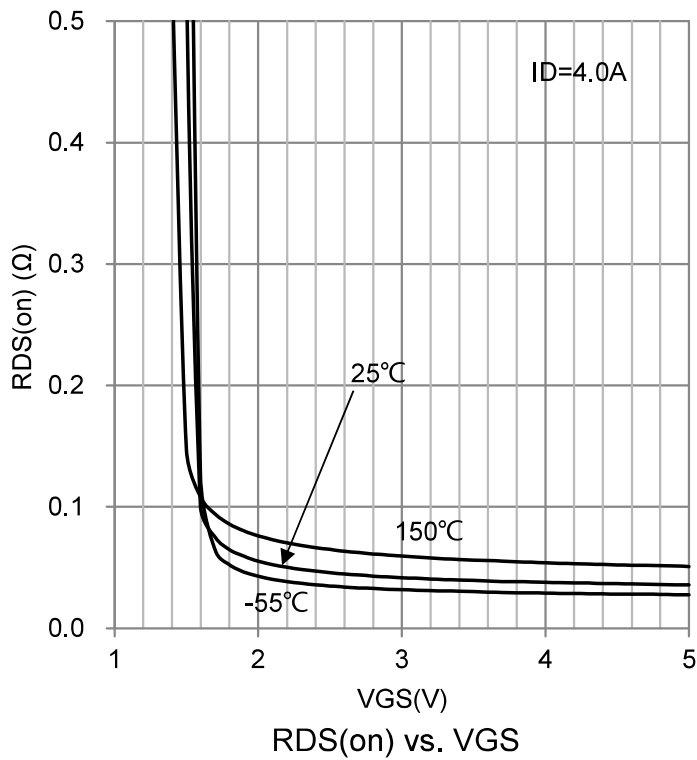
Forward Voltage (VGS = 0 V, ISD = -1.0 A)	VSD	-	-	-1	V
Max.Forward Current	IS	-	-	-2.2	A

3.Pulse Test: Pulse Width ≤300 μs, Duty Cycle ≤2.0%.



7. ELECTRICAL CHARACTERISTICS CURVES

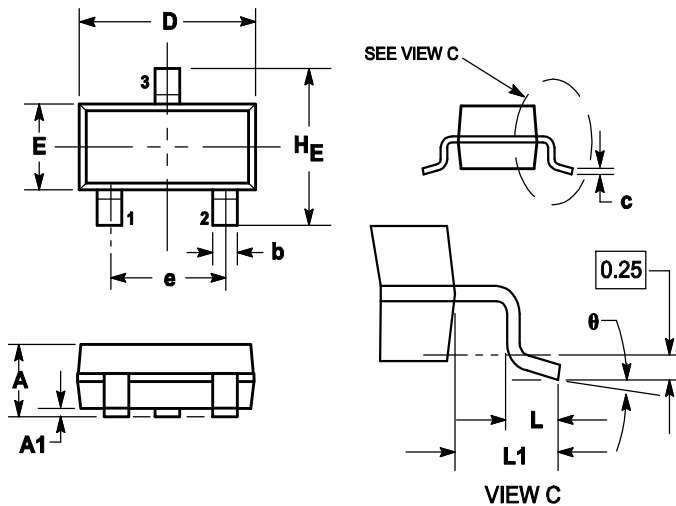


7.ELECTRICAL CHARACTERISTICS CURVES (Con.)


8.OUTLINE AND DIMENSIONS

Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1	1.11	0.035	0.04	0.044
A1	0.01	0.06	0.1	0.001	0.002	0.004
b	0.37	0.44	0.5	0.015	0.018	0.02
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.9	3.04	0.11	0.114	0.12
E	1.20	1.3	1.4	0.047	0.051	0.055
e	1.78	1.9	2.04	0.07	0.075	0.081
L	0.10	0.2	0.3	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
H _E	2.10	2.4	2.64	0.083	0.094	0.104
θ	0°	---	10°	0°	---	10°

9.SOLDERING FOOTPRINT

