

N-Channel 30V MOSFET

E030N3P5CL1

V_{DS} (V)	$R_{DS(on),max}$ (m Ω)	I_D (A)
30V	3.5 @ $V_{GS} = 10V$	120

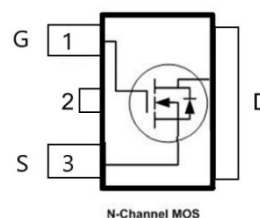
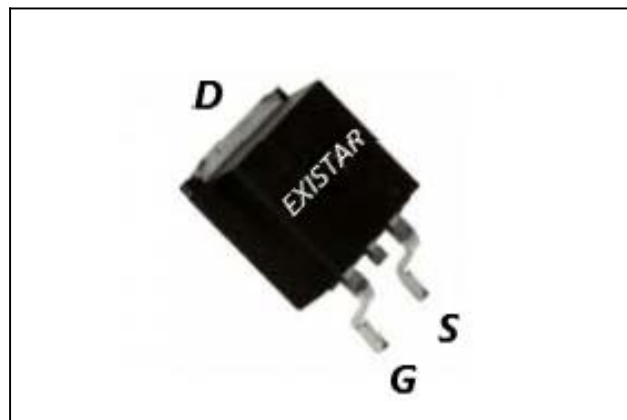
Features

- Low $R_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed
- 100% avalanche tested

Applications

- DC/DC conversion
- Power switch
- PD charger
- Moto driver

TO-252



Package And Ordering Information

Ordering code	Package	Marking
E030N3P5CL1	TO-252	E030N3P5CL1

Ordering Information

Package	Units/ Reel	Reels/ Inner Box	Units/ Inner Box
TO-252	2500	1	2500

Key Performance Parameters

Parameter	Value	Unit
VDS, min @ Tj(max)	30	V
ID, pulse	480	A
RDS(ON), max @ VGS=10V	3.5	mΩ
Qg	48	nC

Absolute Maximum Ratings at Tj=25°C Unless Otherwise Noted

Parameter		Symbol	Limit	Unit
Drain-source voltage		V _{DS}	30	V
Gate-source voltage		V _{GS}	±20	
Continuous drain current	T _C =25°C	I _D	120	A
	T _C =100°C		76	
Pulsed drain current		I _{D,pulse}	480	
Avalanche energy, single pulse		E _{AS}	256	mJ
Power dissipation	T _C =25°C	P _D	78	W
	T _C =100°C		31	
Operating junction and storage temperature range		T _J , T _{stg}	-55 To 150	°C

Thermal Characteristics

Parameter		Symbol	Max.	Unit
Thermal resistance, junction-to-case	Steady state	R _{θJC}	1.61	°C/W
Thermal resistance, junction-to-ambient	Steady state	R _{θJA}	-	

Electrical Characteristics at Tj=25°C unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Static						
Drain to source breakdown voltage	V _{(BR)DSS}	30			V	V _{GS} = 0, I _D = 250 μA
Gate-source threshold voltage	V _{GS(th)}	1		2.5	V	V _{DS} = V _{GS} , I _D = 250 μA
Gate-body leakage	I _{GSS}			±100	nA	V _{DS} = 0 V, V _{GS} = ±20 V
Zero gate voltage drain current	I _{DSS}			1	μA	V _{DS} = 30 V, V _{GS} = 0 V
Drain-source on-resistance	R _{DS(on)}		2.8	3.5	mΩ	V _{GS} = 10 V, I _D = 20 A
Drain-source on-resistance	R _{DS(on)}		4.35	5.7	mΩ	V _{GS} = 4.5 V, I _D = 15 A
Forward transconductance	g _{fs}		28.2		S	V _{DS} = 5 V, I _D = 20 A

Gate resistance	R _g		1.8		Ω	f=1MHz
Gate Charge						
Total gate charge	Q _g		48		nC	V _{DS} = 15 V, I _D = 20 A, V _{GS} = 10 V
Gate-source charge	Q _{gs}		5.2			
Gate-drain charge	Q _{gd}		9.6			
Dynamic						
Turn-on delay time	t _{d(on)}		14.4		ns	V _{DS} = 15 V, V _{GS} = 10 V, R _L = 0.75 Ω, R _{GEN} = 3 Ω
Rise time	t _r		36			
Turn-off delay time	t _{d(off)}		43.6			
Fall time	t _f		22			
Input capacitance	C _{iss}		2875		pF	V _{DS} =15 V, V _{GS} = 0 V, f = 1.0MHz
Output capacitance	C _{oss}		291			
Reverse transfer capacitance	C _{rss}		255			
Body Diode						
Diode forward voltage	V _{SD}			1.2	V	V _{GS} = 0 V, I _F = 20 A
Reverse recovery time	t _{rr}		56		ns	I _s =20 A, di/dt = 100 A/μs
Reverse recovery charge	Q _{rr}		42		nC	

Electrical Characteristics Diagrams

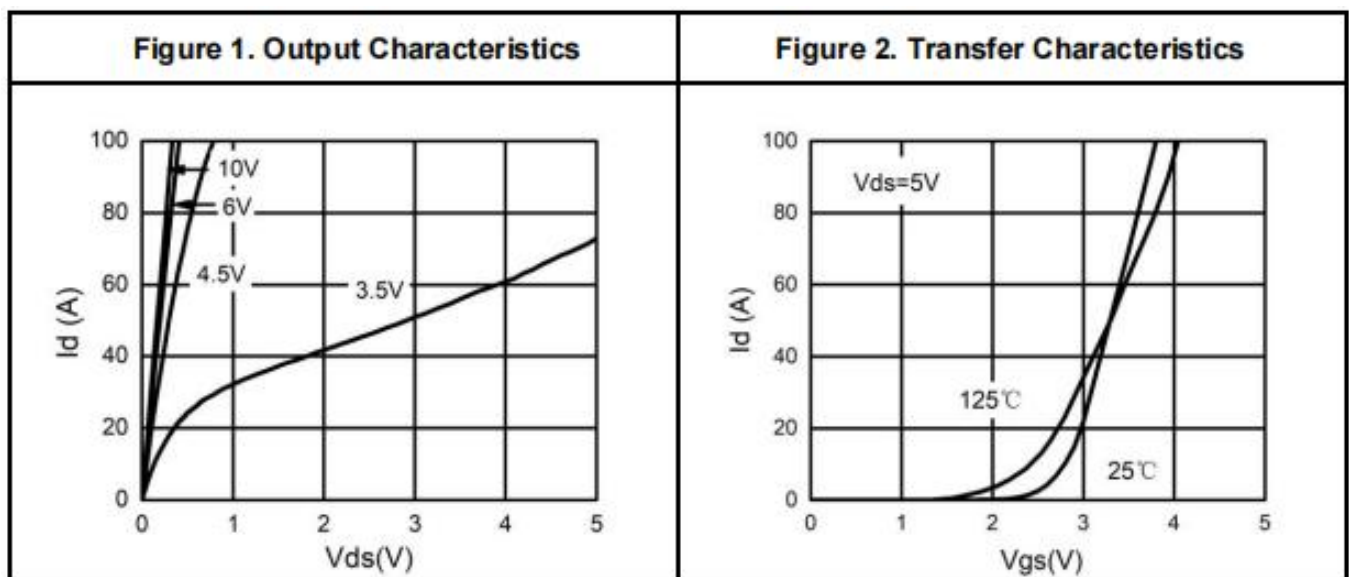


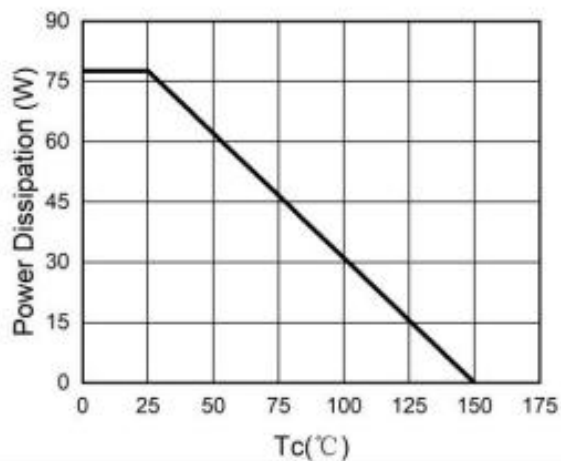
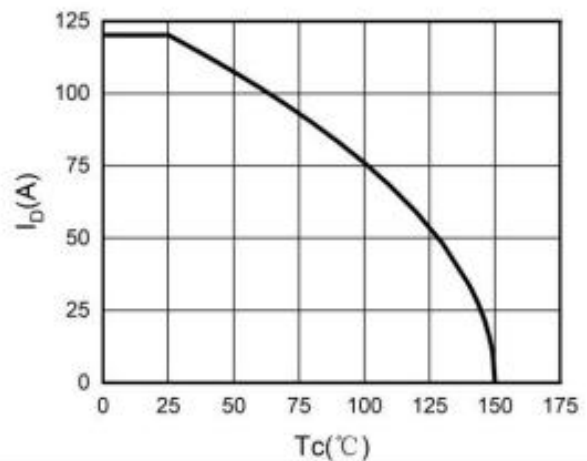
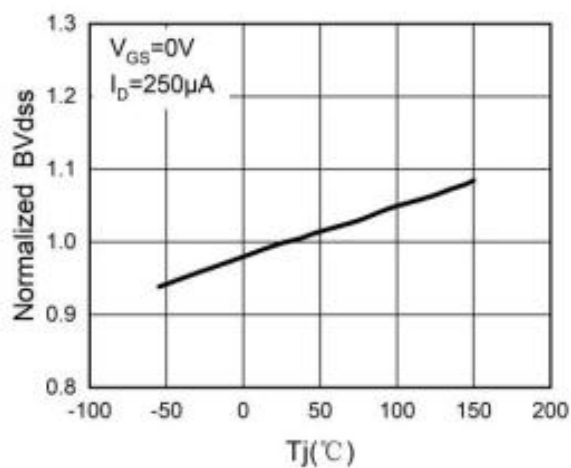
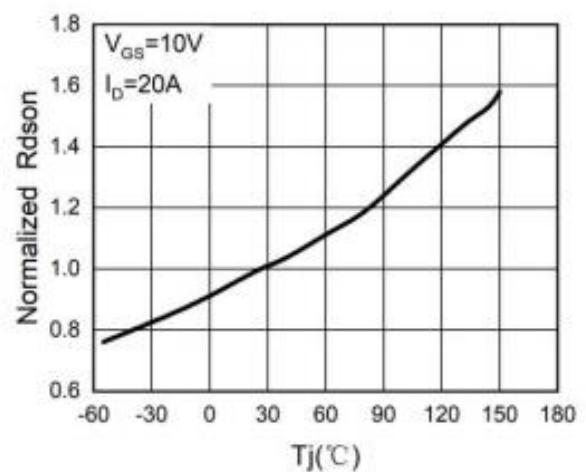
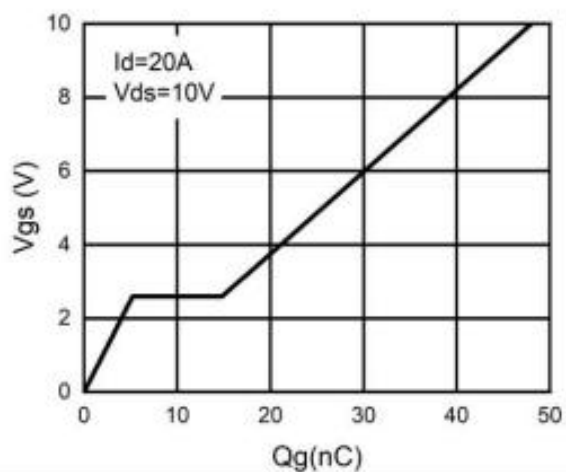
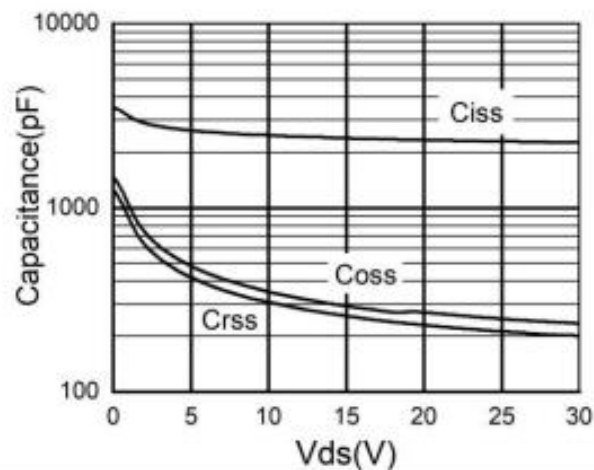
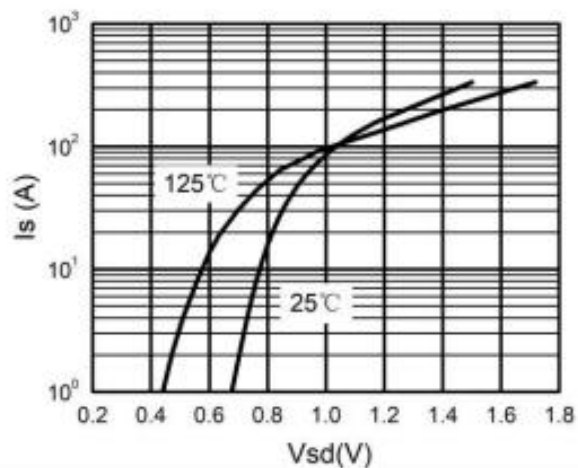
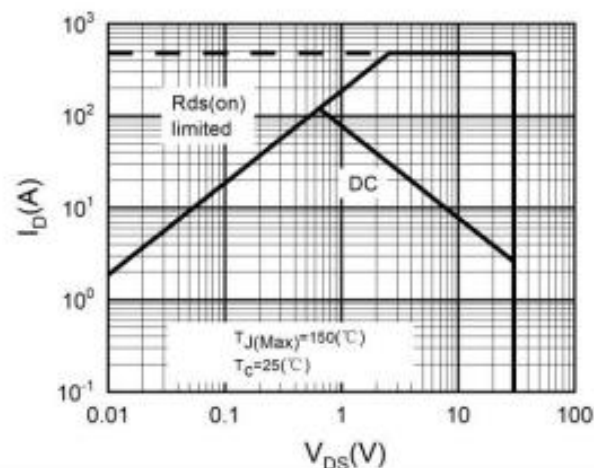
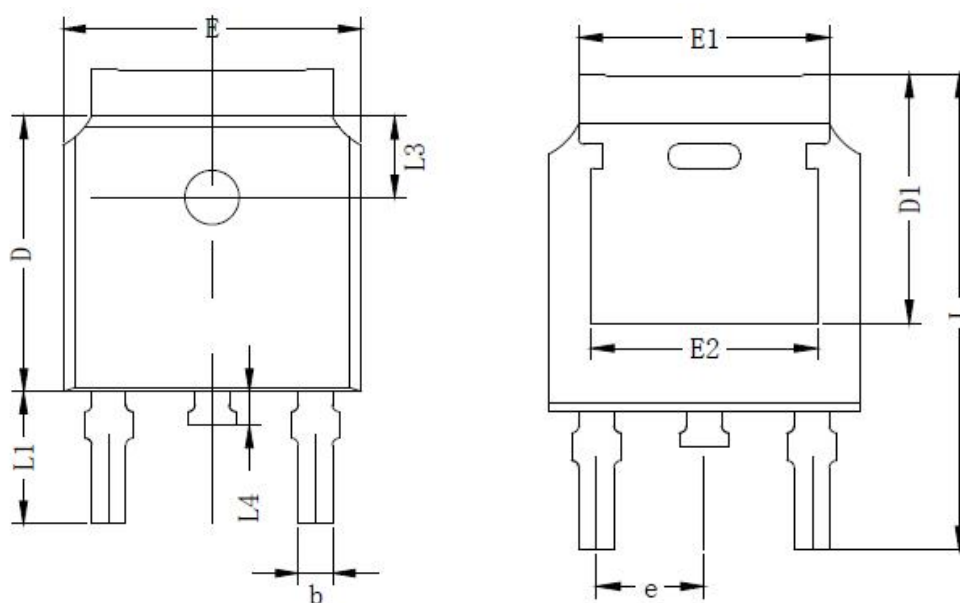
Figure 3. Power Dissipation

Figure 4. Drain Current

Figure 5. BV_{DSS} vs Junction Temperature

Figure 6. $R_{DS(ON)}$ vs Junction Temperature


Figure 7. Gate Charge Waveforms

Figure 8. Capacitance

Figure 9. Body-Diode Characteristics

Figure 10. Maximum Safe Operating Area


Package Outline Dimensions



SYMBOL	MIN	NOM	MAX
A	2.10	2.30	2.50
A1	0.97	1.07	1.17
A2	0.00	—	0.12
b	0.66	0.76	0.86
c	0.45	0.51	0.60
D	5.90	6.10	6.30
D1	5.10	5.30	5.45
E	6.40	6.60	6.80
E1	5.10	5.33	5.45
E2	4.63	4.83	5.03
L	9.90	10.10	10.30
L1	2.74	2.94	3.14
L2	1.40	1.50	1.70
L3	1.65	1.80	1.95
L4	0.60	0.80	1.00
e	2.286BSC		
θ	5°	7°	10°
θ1	0°	—	3°

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