

N-Channel 60V MOSFET

E060N035CL1

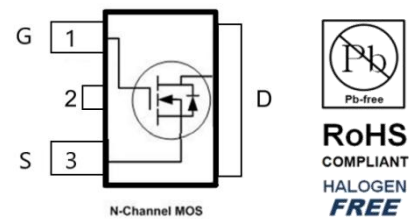
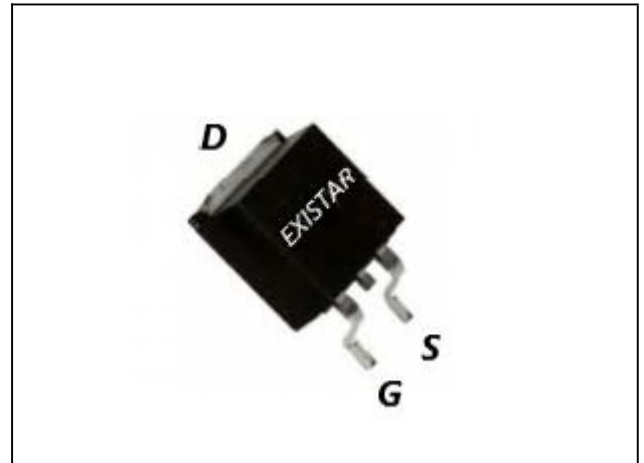
V_{DS} (V)	$R_{DS(on),max}$ (m Ω)	I_D (A)
60V	35 @ $V_{GS} = 10V$	21

Features

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

Applications

- DC/DC conversion
- Power switch

TO-252


Package And Ordering Information

Ordering code	Package	Marking
E060N035CL1	TO-252	E060N035CL1

Ordering Information

Package	Units/ Reel	Reels/ Inner Box	Units/ Inner Box
TO-252	2500	2	5000

Key Performance Parameters

Parameter	Value	Unit
VDS, min @ Tj(max)	60	V
ID, pulse	84	A
RDS(ON), max @ VGS=10V	35	mΩ
Qg	32.5	nC

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

Parameter	Symbol	Limit	Unit
Drain-source voltage	V _{DS}	60	V
Gate-source voltage	V _{GS}	±20	
Continuous drain current	I _D	T _C =25°C	21
		T _C =100°C	14.9
Pulsed drain current	I _{D,pulse}	84	A
Avalanche energy, single pulse	E _{AS}	256	mJ
Power dissipation	P _D	T _C =25°C	33
		T _A =25°C	-
Operating junction and storage temperature range	T _J , T _{stg}	-55 To 175	°C

Thermal Characteristics

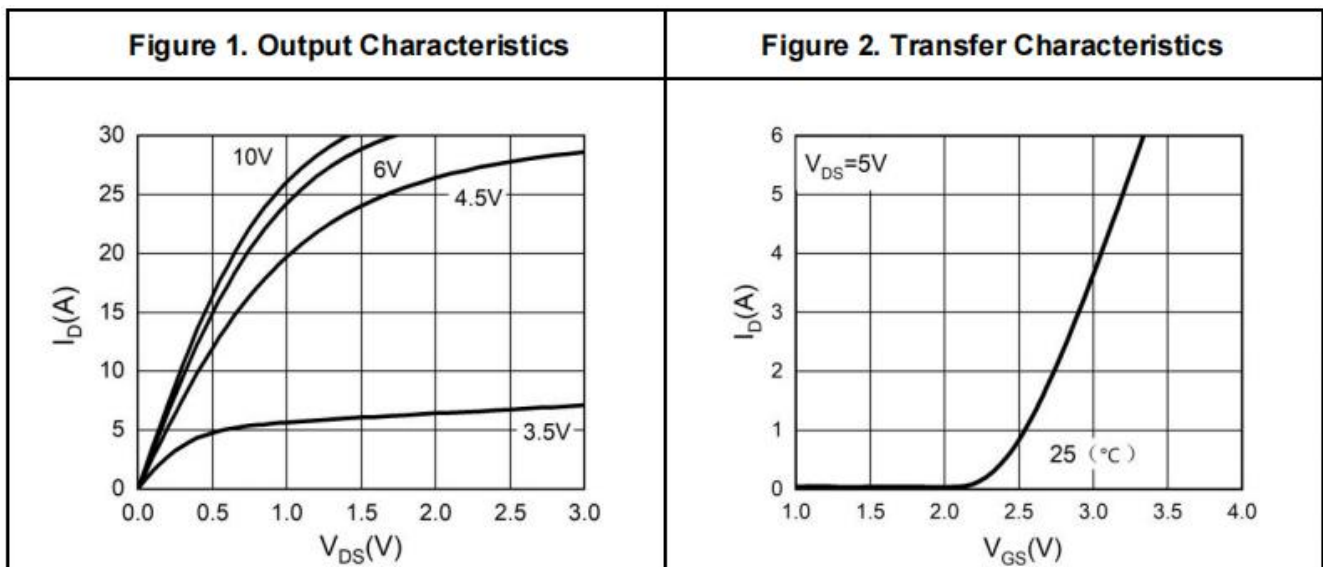
Parameter	Symbol	Max.	Unit
Thermal resistance, junction-to-case	R _{θJC}	4.5	°C/W
Thermal resistance, junction-to-ambient	R _{θJA}	-	

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}	60			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} = 60 V, V _{GS} = 0 V
Drain-source on-resistance	R _{DS(on)}		26.4	35	mΩ	V _{GS} = 10 V, I _D = 10 A
Drain-source on-resistance	R _{DS(on)}		32.4	43	mΩ	V _{GS} = 4.5 V, I _D = 5 A
Forward transconductance	g _{fs}		14.6		S	V _{DS} = 5 V, I _D = 10 A

Gate resistance	R_g		1.2		Ω	$f=1\text{MHz}$
Gate Charge						
Total gate charge	Q_g		32.5		nC	$V_{DS} = 30\text{ V}, I_D = 10\text{ A}, V_{GS} = 10\text{ V}$
Gate-source charge	Q_{gs}		3.36			
Gate-drain charge	Q_{gd}		6.4			
Dynamic						
Turn-on delay time	$t_{d(on)}$		12.7		ns	$V_{DS} = 30\text{ V}, V_{GS} = 10\text{ V},$ $R_L = 3\ \Omega, R_{GEN} = 3\ \Omega$
Rise time	t_r		2.6			
Turn-off delay time	$t_{d(off)}$		27.2			
Fall time	t_f		3.2			
Input capacitance	C_{iss}		1052		pF	$V_{DS}=30\text{ V}, V_{GS} = 0\text{ V}, f = 1.0\text{MHz}$
Output capacitance	C_{oss}		533			
Reverse transfer capacitance	C_{rss}		456			
Body Diode						
Diode forward voltage	V_{SD}			1.2	V	$V_{GS} = 0\text{ V}, I_F = 10\text{ A}$
Reverse recovery time	t_{rr}		19.5		ns	$I_S=10\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$
Reverse recovery charge	Q_{rr}		15.8		nC	

Electrical Characteristics Diagrams



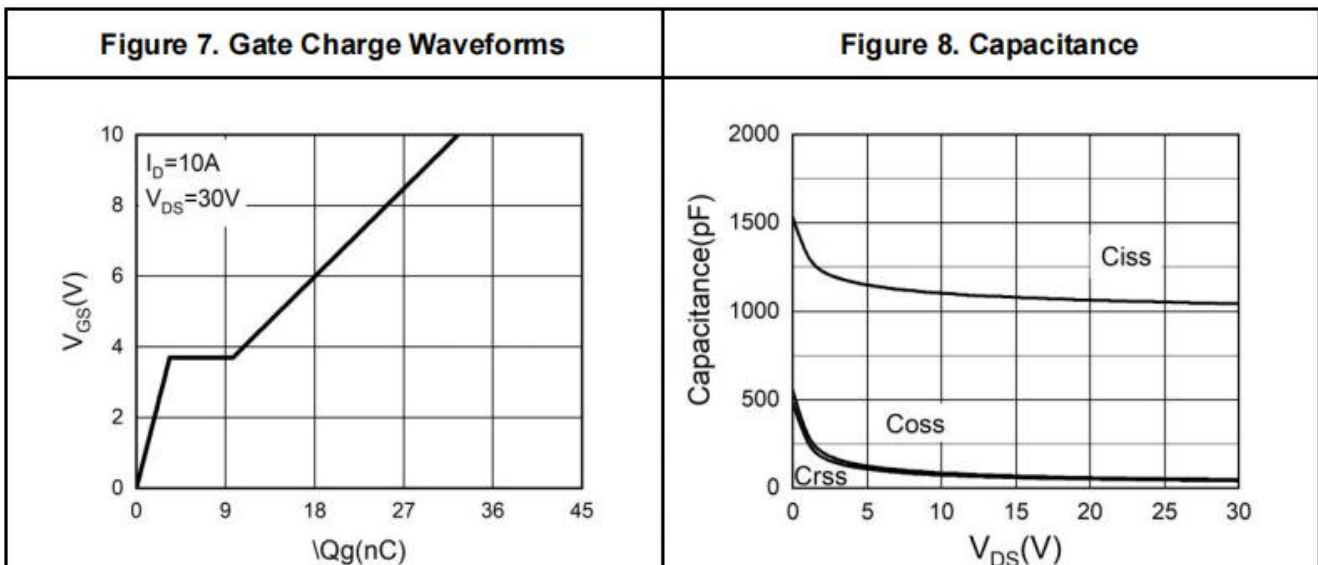
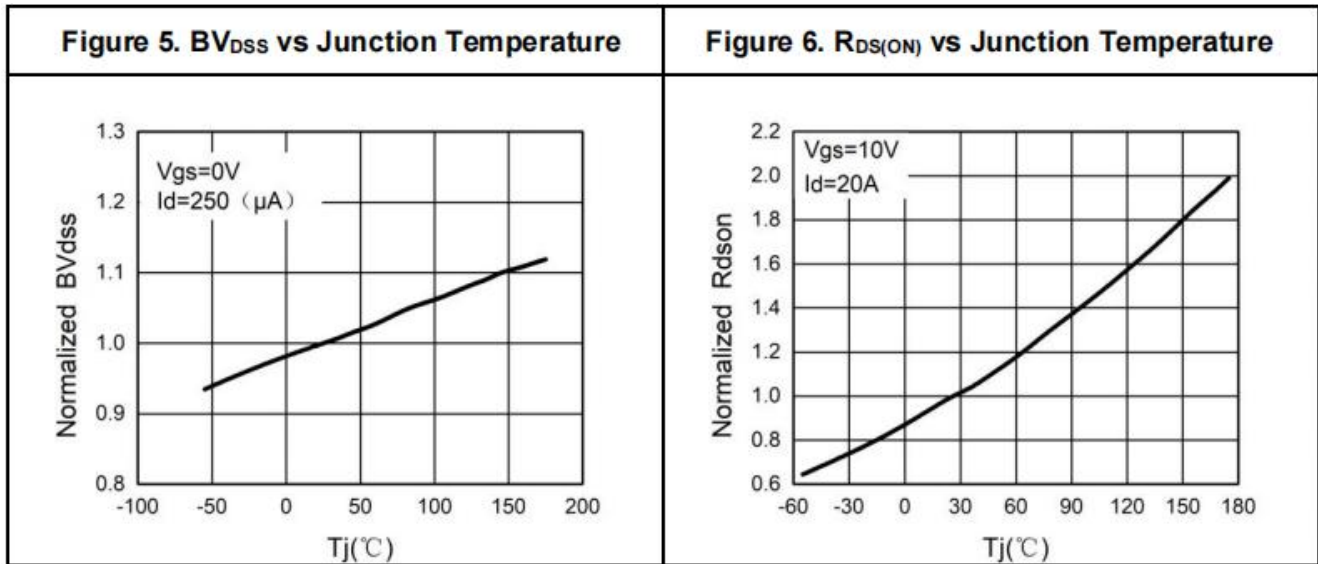
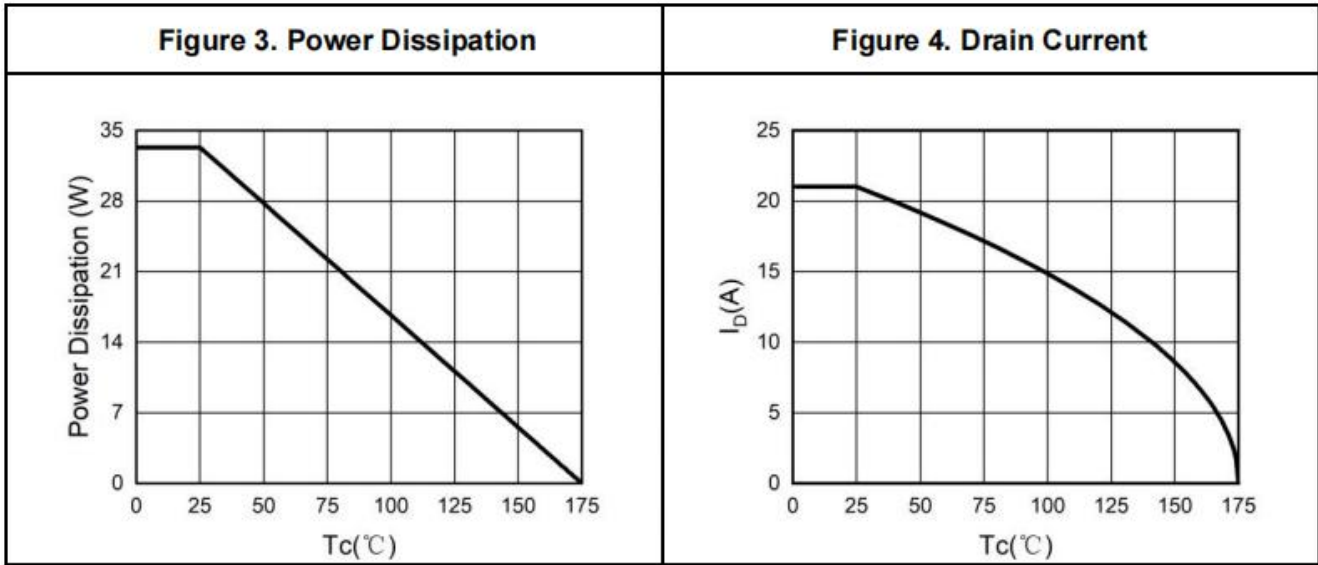


Figure 9. Body-Diode Characteristics

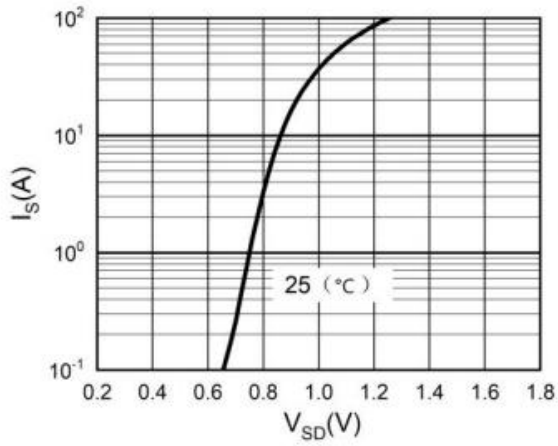
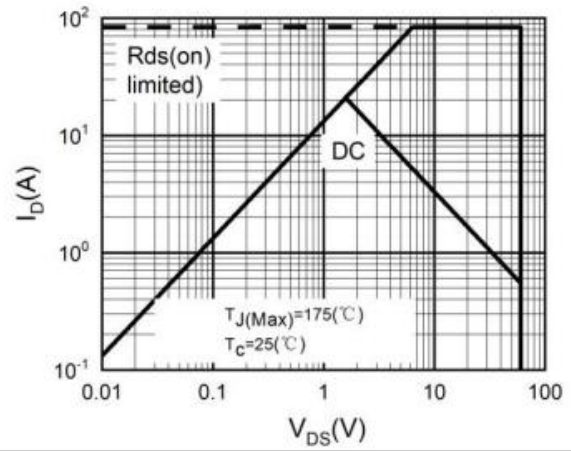
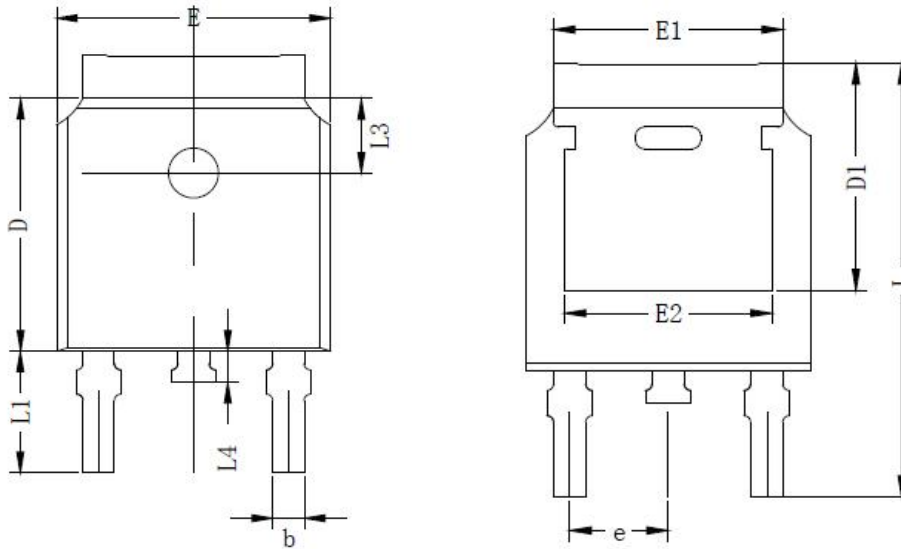


Figure 10. Maximum Safe Operating Area



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°
$\theta 1$	0°	-	3°

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