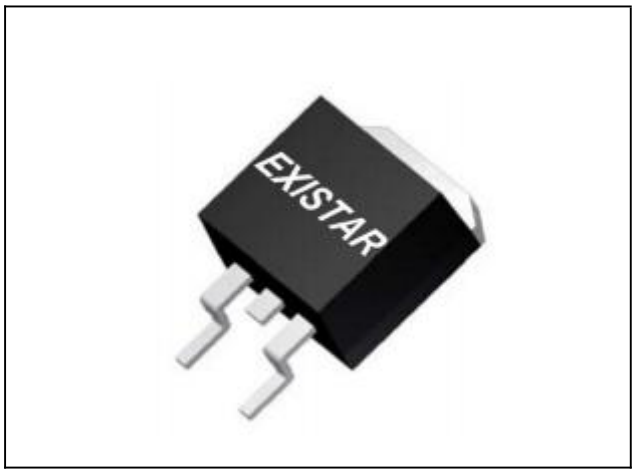
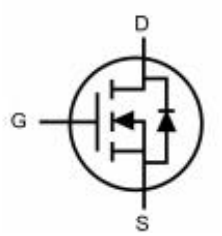
N-Channel 80V MOSFET

E080N8P7DH1

V_{DS} (V)	$R_{DS(on),max}$ (mΩ)	I_D (A)
80V	8.7 @ V_{GS} = 10V	80

TO-263





Pb-free
RoHS
COMPLIANT
HALOGEN
FREE

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

Package And Ordering Information

Ordering code	Package	Marking
E080N8P7DH1	TO-263	E080N8P7DH1

Ordering Information

Package	Units/ Reel	Reels/ Inner Box	Units/ Inner Box
TO-263	800	1	800

Key Performance Parameters

Parameter	Value	Unit
VDS, min @ Tj(max)	80	V
ID, pulse	324	A
RDS(ON), max @ VGS=10V	8.7	mΩ
Qg	112	nC

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

Parameter		Symbol	Limit	Unit
Drain-source voltage		V_{DS}	80	V
Gate-source voltage		V_{GS}	±20	
Continuous drain current	T_C=25°C	I_D	80	A
	T_C=100°C		51	
Pulsed drain current		$I_{D,pulse}$	324	
Avalanche energy, single pulse		E_{AS}	361	mJ
Power dissipation	T_C=25°C	P_D	125	W
	T_C=100°C		50	
Operating junction and storage temperature range		T_J, T_{stg}	-55 To 150	℃

Thermal Characteristics

Parameter		Symbol	Max.	Unit
Thermal resistance, junction-to-case	Steady state	$R_{\theta JC}$	1	°C/W
Thermal resistance, junction-to-ambient	Steady state	$R_{\theta JA}$	-	

Electrical Characteristics at Tj=25°C unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Static						
Drain to source breakdown voltage	$V_{(BR)DSS}$	80			V	V_{GS} = 0, I_D = 250 μA
Gate-source threshold voltage	$V_{GS(th)}$	2	2.8	4	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} = 80 V, V_{GS} = 0 V
Drain-source on-resistance	$R_{DS(on)}$		7.5	8.7	mΩ	V_{GS} = 10 V, I_D = 40 A
			9	11.2	mΩ	V_{GS} = 6 V, I_D = 20 A
Forward transconductance	gfs		36		S	V_{DS} = 10 V, I_D = 40 A

Gate resistance	Rg		0.65		Ω	f=1MHz
Gate Charge						
Total gate charge	Qg		112		nC	V_{DS} = 40 V, I_D = 20 A, V_{GS} = 10 V
Gate-source charge	Qgs		15			
Gate-drain charge	Qgd		45			
Dynamic						
Turn-on delay time	$t_{d(on)}$		30		ns	V_{DS} = 40 V, V_{GS} = 10 V, R_L = 2 Ω, R_{GEN} = 6 Ω
Rise time	t_r		18			
Turn-off delay time	$t_{d(off)}$		65			
Fall time	t_f		30			
Input capacitance	C_{iss}		4653		pF	V_{DS} =40 V, V_{GS} = 0 V, f = 1.0MHz
Output capacitance	C_{oss}		197			
Reverse transfer capacitance	C_{rss}		171			
Body Diode						
Diode forward voltage	V_{SD}			1.2	V	V_{GS} = 0 V, I_F = 20 A
Reverse recovery time	t_{rr}		7		ns	I_S =20 A, di/dt = 100 A/μs
Reverse recovery charge	Q_{rr}		40		nC	

Electrical Characteristics Diagrams

Figure 1. Output Characteristics

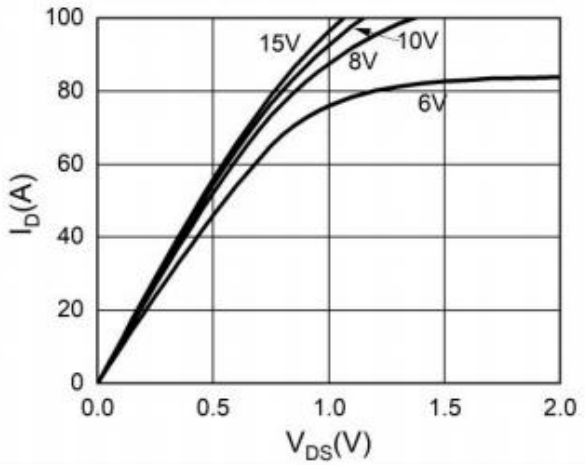


Figure 2. Transfer Characteristics

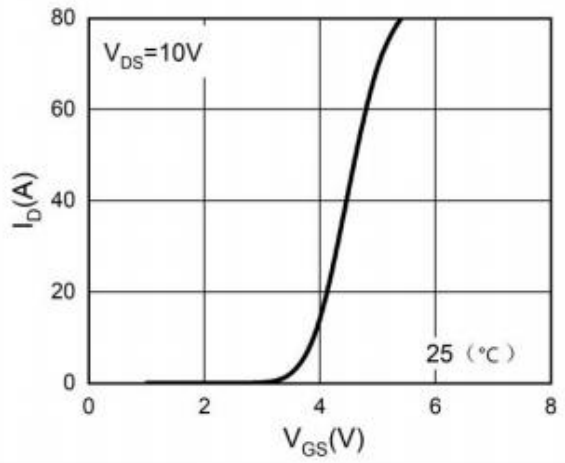


Figure 3. Power Dissipation

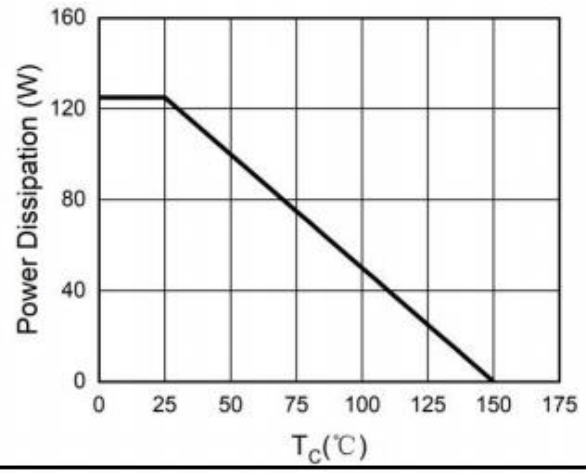


Figure 4. Drain Current

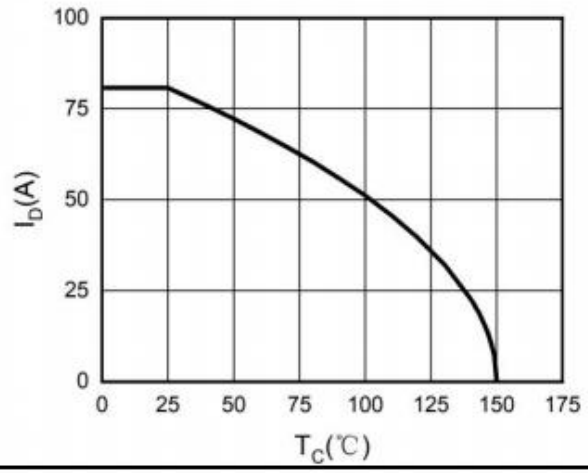


Figure 5. BV_{DSS} vs Junction Temperature

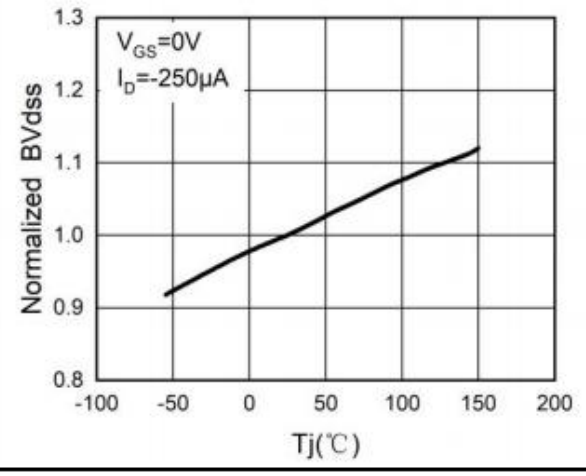


Figure 6. $R_{DS(ON)}$ vs Junction Temperature

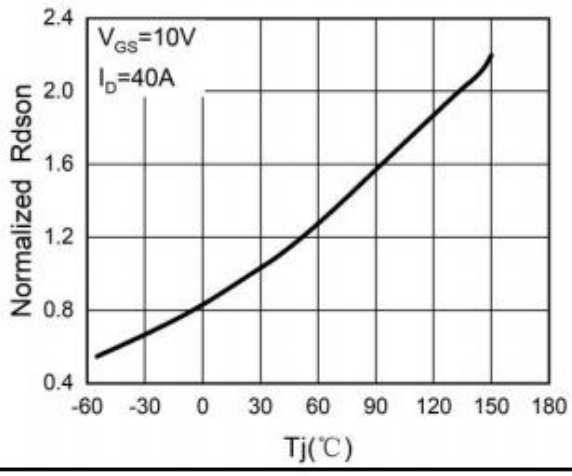


Figure 7. Gate Charge Waveforms

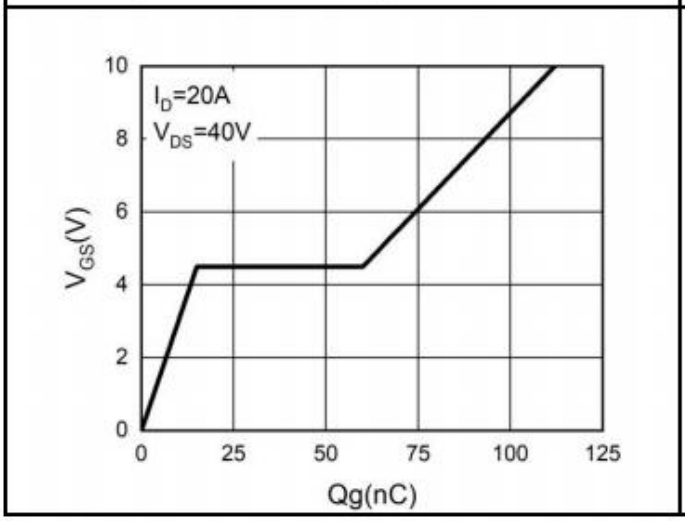


Figure 8. Capacitance

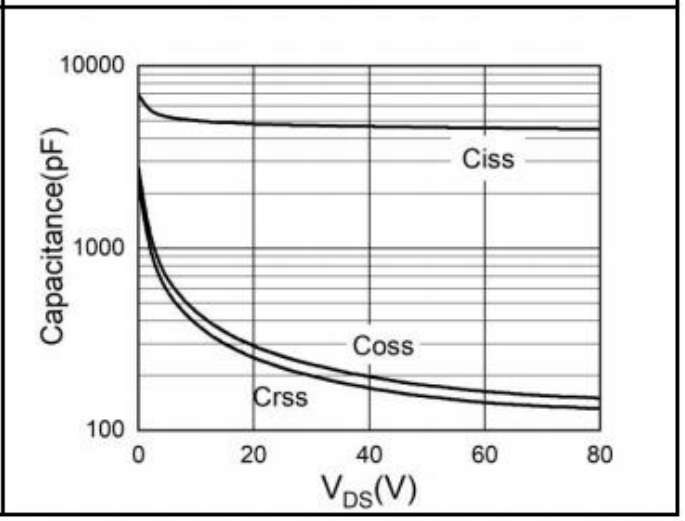


Figure 9. Body-Diode Characteristics

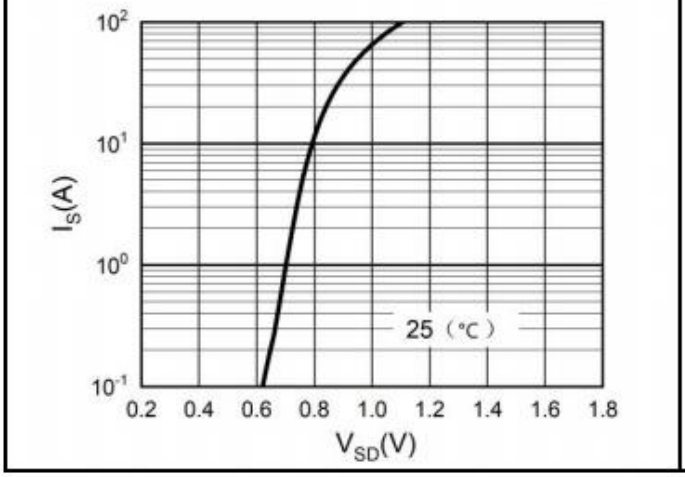
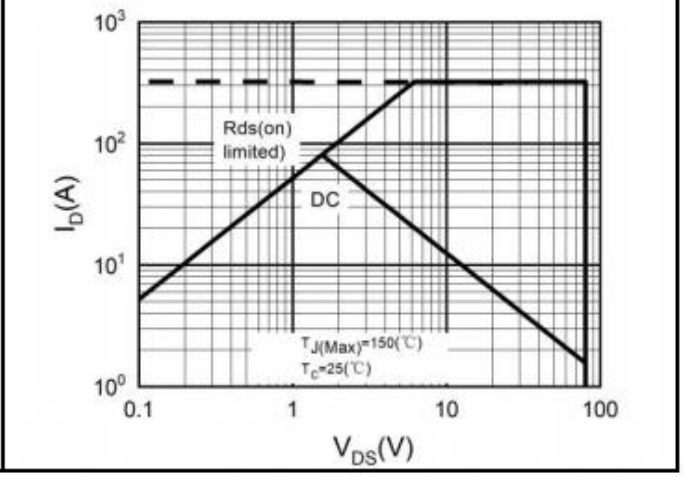
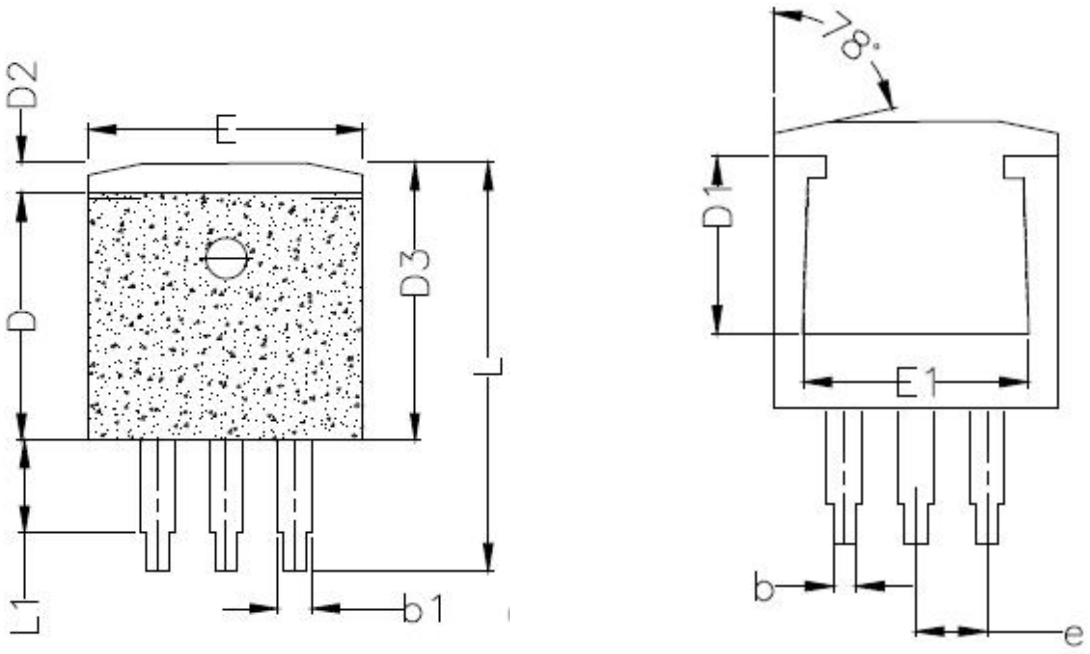


Figure 10. Maximum Safe Operating Area



Package Outline Dimensions



SYMBOL	MIN	NOM	MAX
A	4.40	4.57	4.70
A1	2.59	2.69	2.79
A2	1.40	1.50	1.60
b	0.71	0.81	0.91
b1	1.17	1.27	1.37
c	1.17	1.27	1.37
c1	0.30	0.38	0.45
D	9.00	9.15	9.30
D1	6.10	6.30	6.50
D2	0.91	1.11	1.31
D3	10.06	10.26	10.46
E	10.00	10.16	10.40
E1	7.92	8.02	8.12
L	14.90	15.10	15.40
L1	3.23	3.43	3.63
L2	2.20	2.30	2.40
e	2.54BSC		
θ	0°	–	8°
θ1	3°	5°	8°

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