

N-Channel 150V MOSFET

E150N5P5GH1

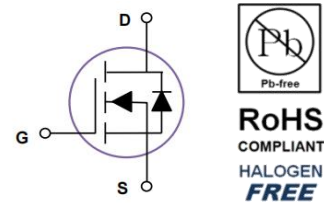
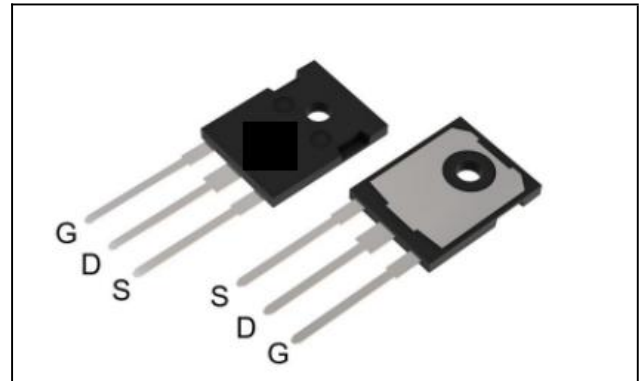
V_{DS} (V)	$R_{DS(on),max}$ (m Ω)	I_D (A)
150V	5.8 @ $V_{GS} = 10V$	205

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-247


Package And Ordering Information

Ordering code	Package	Marking
E150N5P5GH1	TO-247	E150N5P5GH1

Ordering Information

Package	Units/ Tube	Tubes/ Inner Box	Units/ Inner Box
TO-247	30	15	450

Key Performance Parameters

Parameter	Value	Unit
VDS, min @ Tj(max)	150	V
ID, pulse	820	A
RDS(ON), max @ VGS=10V	5.8	mΩ
Qg	142	nC

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

Parameter	Symbol	Limit	Unit
Drain-source voltage	V _{DS}	150	V
Gate-source voltage	V _{GS}	±25	
Continuous drain current	I _D	T _C =25°C	205
		T _C =100°C	145
Pulsed drain current	I _{D,pulse}	820	A
Avalanche energy, single pulse	E _{AS}	1560	mJ
Power dissipation	P _D	T _C =25°C	517
		T _A =25°C	3.3
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}	0.29	°C/W
Thermal resistance, junction-to-ambient	R _{θJA}	38	

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}	150			V	V _{GS} = 0, I _D = 250 μA
Gate-source threshold voltage	V _{GS(th)}	2.5	3	3.5	V	V _{DS} = V _{GS} , I _D = 250 μA
Gate-body leakage	I _{GSS}			±100	nA	V _{DS} = 0 V, V _{GS} = ±25 V
Zero gate voltage drain current	I _{DSS}			1	μA	V _{DS} = 150 V, V _{GS} = 0 V
Drain-source on-resistance	R _{DS(on)}		4.8	5.8	mΩ	V _{GS} = 10 V, I _D = 80 A
			5.4	7.0	mΩ	V _{GS} = 6 V, I _D = 40 A
Forward transconductance	g _{fs}		-		S	V _{DS} = 5 V, I _D = 30 A

Gate resistance	R _g	0.5	2	4	Ω	f=1MHz
Gate Charge						
Total gate charge	Q _g		142	249	nC	V _{DS} = 75 V, I _D = 80 A, V _{GS} = 10 V
Gate-source charge	Q _{gs}		41	72		
Gate-drain charge	Q _{gd}		32	56		
Dynamic						
Turn-on delay time	t _{d(on)}		31		ns	V _{DS} = 75 V, I _D = 80 A, V _{GS} = 10 V, R _{GEN} = 3.9 Ω
Rise time	t _r		106			
Turn-off delay time	t _{d(off)}		96			
Fall time	t _f		109			
Input capacitance	C _{iss}	4665	9325	16320	pF	V _{DS} = 75 V, V _{GS} = 0 V, f = 100kHz
Output capacitance	C _{oss}	365	730	1275		
Reverse transfer capacitance	C _{rss}	10	20	35		
Body Diode						
Diode forward voltage	V _{SD}		0.87	1	V	V _{GS} = 0 V, I _F = 80 A
Reverse recovery time	t _{rr}		141	282	ns	V _R = 75 V, I _S = 80 A, di/dt = 100
Reverse recovery charge	Q _{rr}		499	998	nC	A/μs

Electrical Characteristics Diagrams

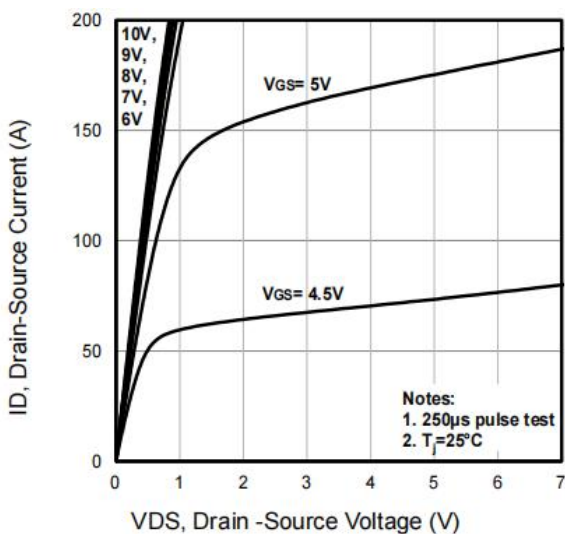


Fig1. Typical Output Characteristics

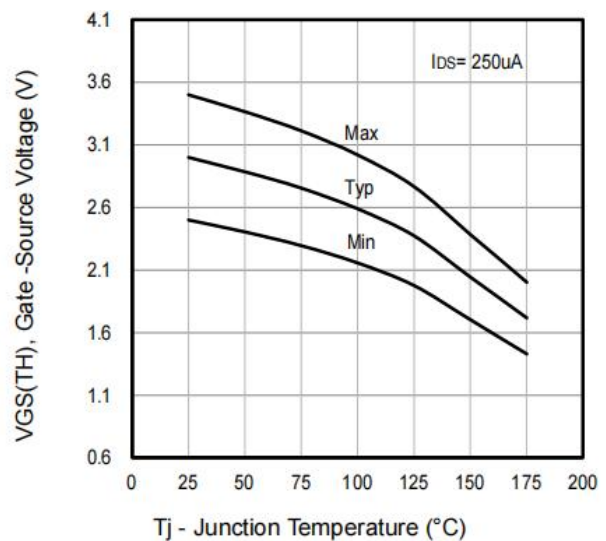


Fig2. Typical V_{GS(TH)} Gate -Source Voltage Vs. T_j

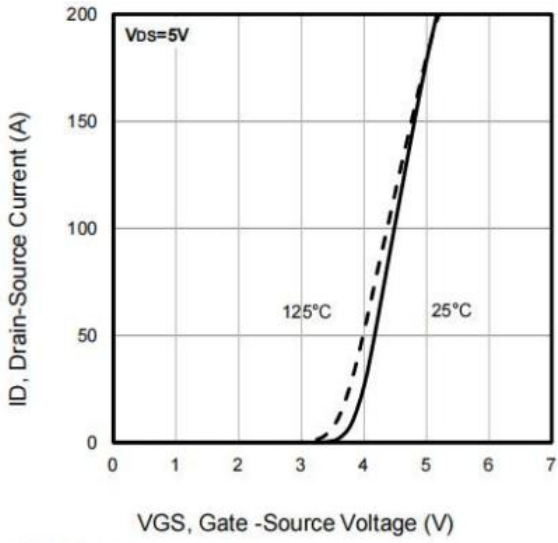


Fig3. Typical Transfer Characteristics

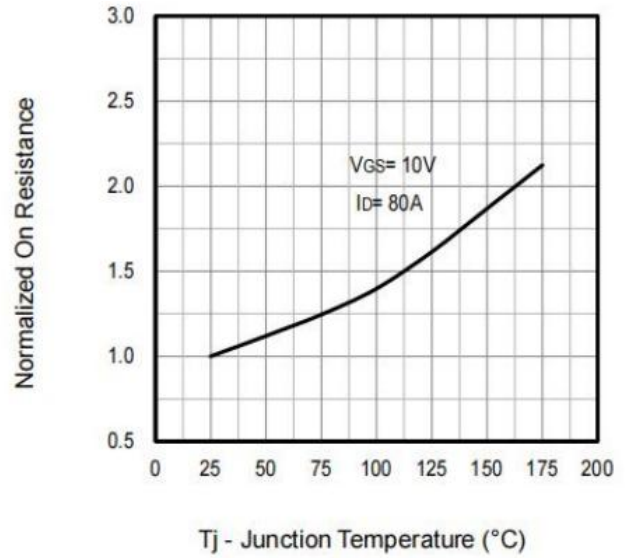


Fig4. Typical Normalized On-Resistance Vs. Tj

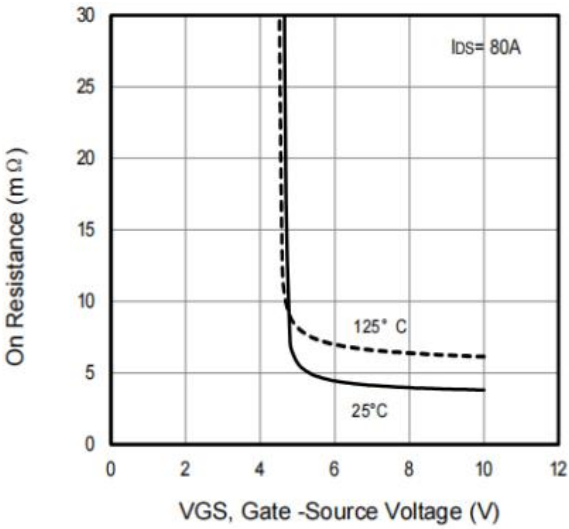


Fig5. Typical On Resistance Vs Gate-Source Voltage

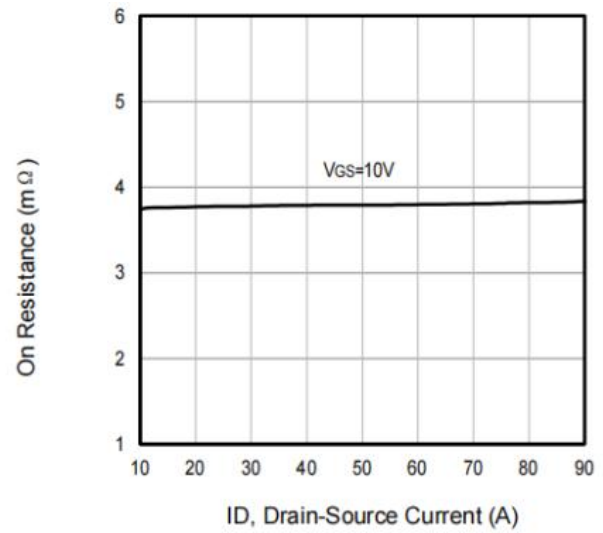


Fig6. Typical On Resistance Vs Drain Current

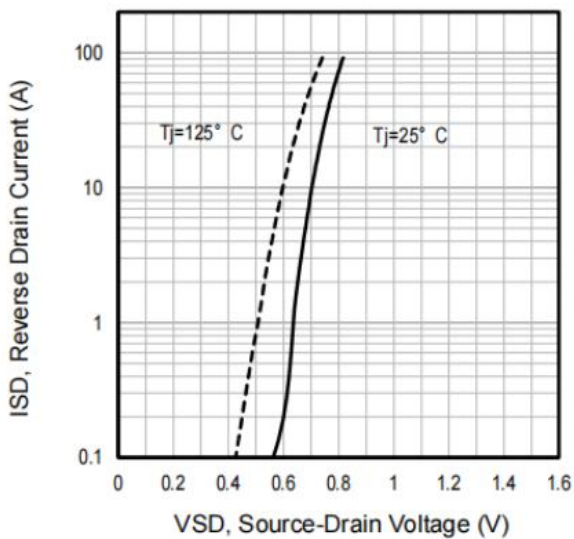


Fig7. Typical Source-Drain Diode Forward Voltage

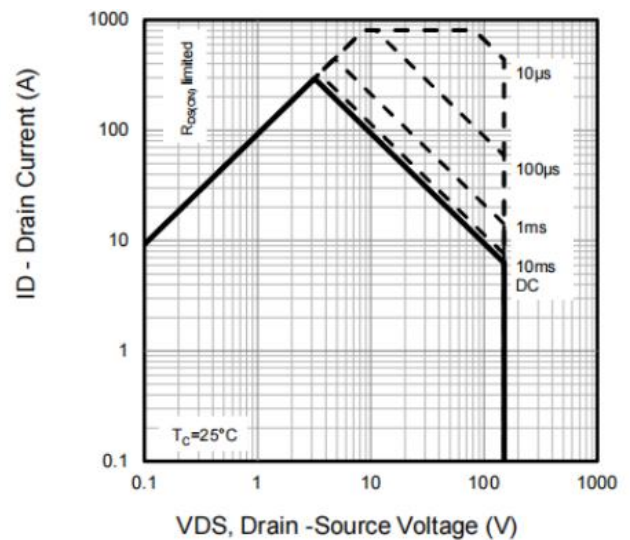


Fig8. Maximum Safe Operating Area



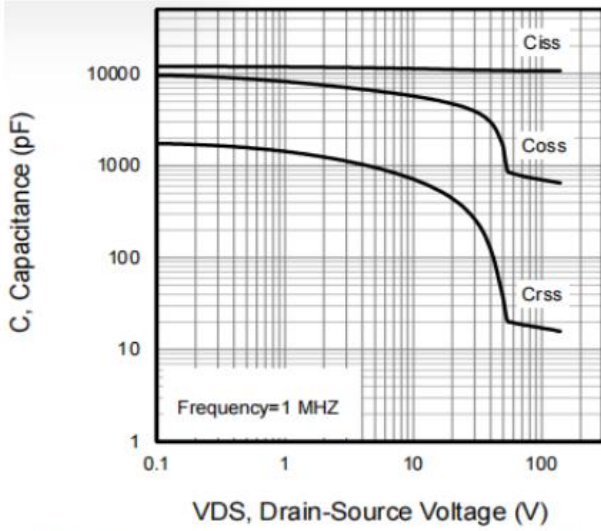


Fig9. Typical Capacitance Vs. Drain-Source Voltage

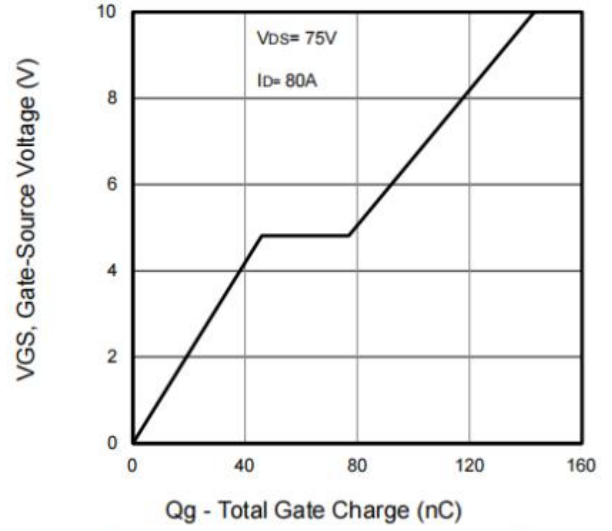


Fig10. Typical Gate Charge Vs. Gate-Source Voltage

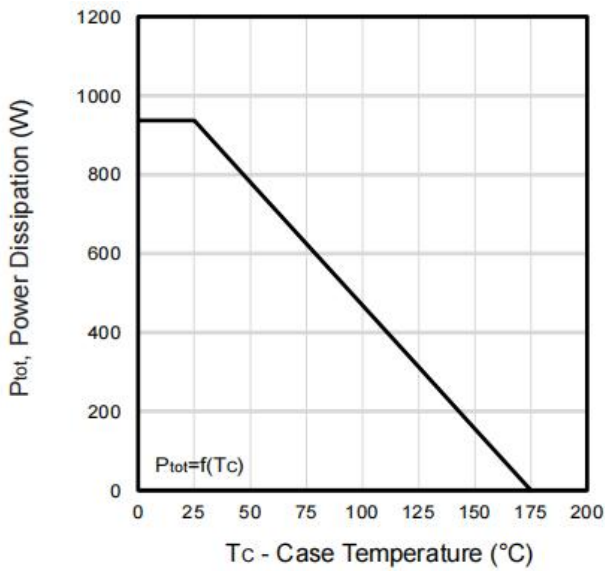


Fig11. Power Dissipation Vs. Case Temperature

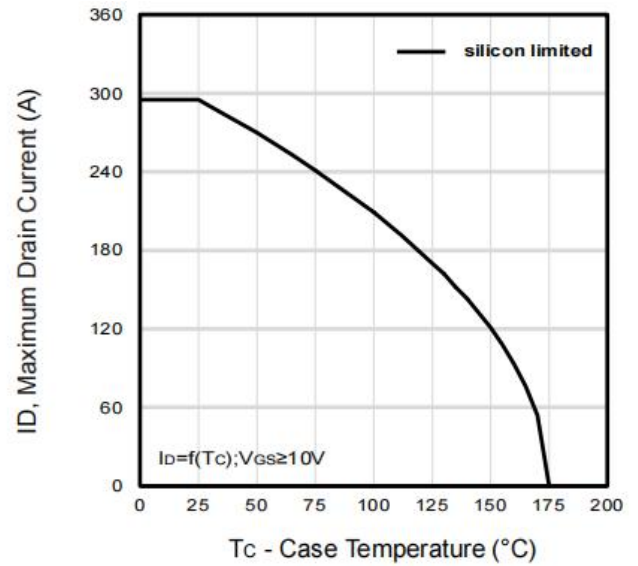


Fig12. Maximum Drain Current Vs. Case Temperature

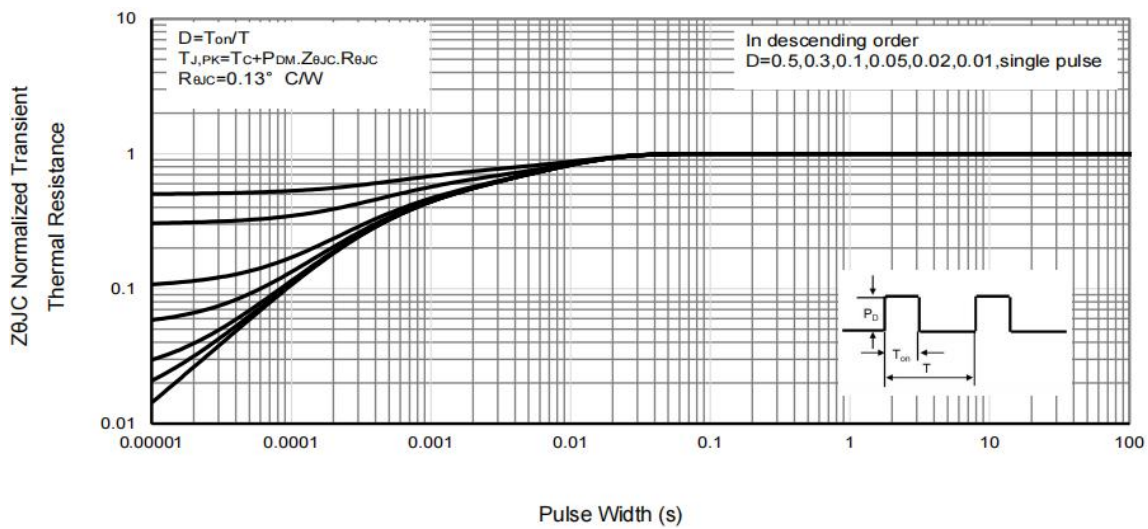


Fig13. Normalized Maximum Transient Thermal Impedance



Test circuits and waveforms

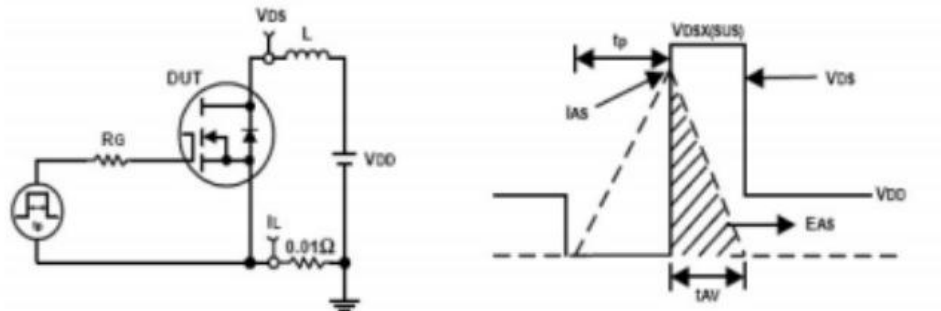


Fig14. Unclamped Inductive Test Circuit and waveforms

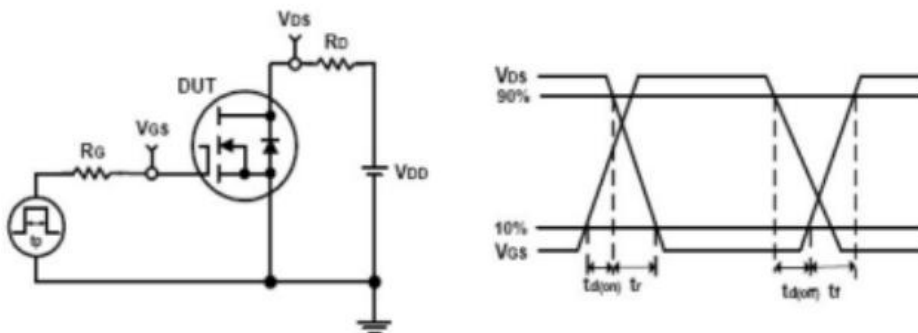
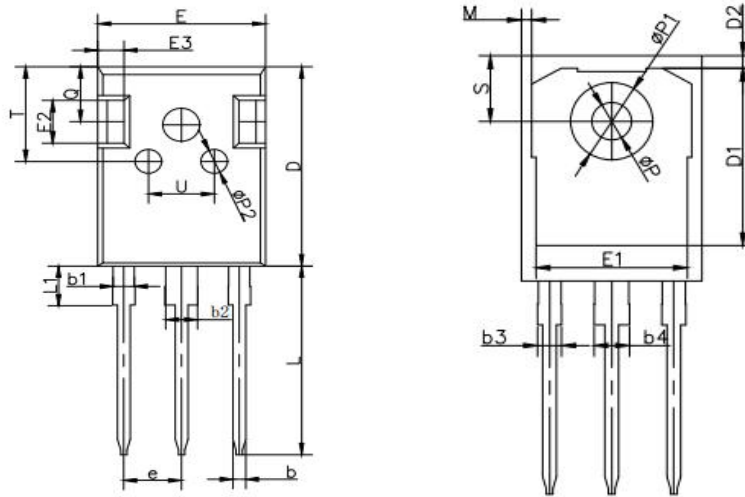


Fig15. Switching Time Test Circuit and waveforms

Package Outline Dimensions


TO247-3L			
DIM.	MIN.	NOM.	MAX.
A	4.90	5.00	5.10
A1	2.31	2.432	2.51
A2	1.90	2.00	2.10
b	1.16	1.20	1.26
b1	1.96	2.00	2.06
b2	2.96	3.00	3.06
b3	-	-	2.25
b4	-	-	3.25
c	0.59	0.60	0.66
D	20.90	21.00	21.10
D1	16.25	16.55	16.85
D2	1.05	1.17	1.35
E	15.70	15.80	15.90
E1	13.10	13.26	13.50
E2	4.40	4.50	4.60
E3	2.40	2.50	2.60
e	5.4368SC		
L	19.80	19.90	20.10
L1	-	-	4.30
M	0.35	0.89	0.95
P	3.40	3.50	3.60
P1	7.00	7.20	7.40
P2	2.40	2.50	2.60
Q	5.60	5.80	6.00
S	6.05	6.15	6.25
T	9.80	10.00	10.20
U	6.00	6.20	6.40
All dimensions in millimeters			

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