SFP135N200C3,SFB132N200C3

N-MOSFET 200V, 11.3mΩ, 95A

Features

- N-channel, normal level
- Enhanced avalanche ruggedness
- Maximum 175°C junction temperature

Product Summary

VDS	200V
$R_{DS(on)}$	11.3mΩ
I_D	95A

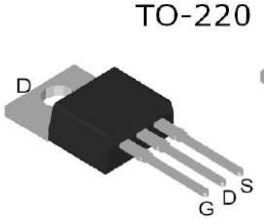
100% DVDS Tested

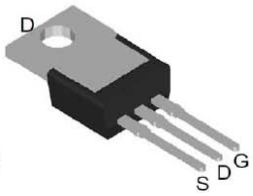
100% Avalanche Tested

Applications

- DC/DC and AC/DC converters
- Brushed and BLDC Motor drive systems
- Battery powered systems

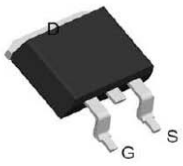
TO-220

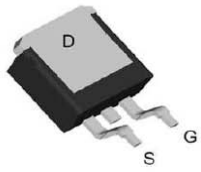




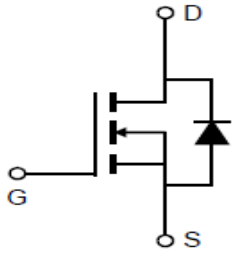
SFP135N200C3

TO-263





SFB132N200C3



Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
SFP135N200C3	135N200C3	TO-220	Tube	N/A	N/A	50pcs
SFB132N200C3	132N200C3	TO-263	Tube	N/A	N/A	50pcs

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	200	V
Continuous drain current T_C = 25°C (Silicon limit) T_C = 25°C (Package limit) T_C = 100°C (Silicon limit)	I_D	 95 120 67	A
Pulsed drain current (T_C = 25°C, t_p limited by T_{jmax})	$I_{D\ pulse}$	380	A
Avalanche energy, single pulse (L=0.5mH, Rg=25Ω)	E_{AS}	1406	mJ
Gate-Source voltage	V_{GS}	±20	V
Power dissipation (T_C = 25°C)	P_{tot}	300	W
Operating junction and storage temperature	T_j , T_{stg}	-55...+175	°C

Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance, junction – case.	R_{thJC}	0.5	°C/W
Thermal resistance, junction – ambient(min. footprint)	R_{thJA}	62.5	

Electrical Characteristic (at Tj = 25 °C, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Static Characteristic						
Drain-source breakdown voltage	BV_{DSS}	200	219	-	V	V_{GS}=0V, I_D=250uA
Gate threshold voltage	$V_{GS(th)}$	3.0	3.7	4.5	V	V_{DS}=V_{GS},I_D=250uA
Zero gate voltage drain current	I_{DSS}	- -	0.05 -	1 5	μA	V_{DS}=200V,V_{GS}=0V T_j=25°C T_j=125°C
Gate-source leakage current	I_{GSS}	-	10	100	nA	V_{GS}=±20V,V_{DS}=0V
Drain-source on-state resistance	$R_{DS(on)}$	- -	11.3 11.0	13.5 13.2	mΩ	V_{GS}=10V, I_D=50A TO-220 TO-263
Transconductance	g_{fs}	-	90	-	S	V_{DS}=10V,I_D=50A
Dynamic Characteristic						
Input Capacitance	C_{iss}	-	6900	-	pF	V_{GS}=0V, V_{DS}=100V, f=1MHz
Output Capacitance	C_{oss}	-	401	-		
Reverse Transfer Capacitance	C_{rss}	-	7	-		
Gate Total Charge	Q_G	-	83	-	nC	V_{GS}=10V, V_{DS}=100V, I_D=50A, f=1MHz
Gate-Source charge	Q_{gs}	-	39	-		
Gate-Drain charge	Q_{gd}	-	12	-		
Turn-on delay time	$t_{d(on)}$	-	37	-	ns	V_{GS}=10V, V_{DS}=100V, R_G=3.0Ω
Rise time	t_r	-	12	-		
Turn-off delay time	$t_{d(off)}$	-	62	-		
Fall time	t_f	-	8	-		
Gate resistance	R_G	-	2.8	-	Ω	V_{GS}=0V, V_{DS}=0V, f=1MHz

Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Diode continous forward current	I_S	-	-	95	A	-
Diode pulse current	$I_{S,pulse}$	-	-	380	A	pulsed; tp≤10 μs
Body Diode Forward Voltage	V_{SD}	-	0.9	1.2	V	V_{GS}=0V,I_{SD}=90A
Body Diode Reverse Recovery Time	t_{rr}	-	167	-	ns	I_F=50A, dI/dt=100A/μs
Body Diode Reverse Recovery Charge	Q_{rr}	-	1010	-	nC	I_F=50A, dI/dt=100A/μs

Typical Performance Characteristics

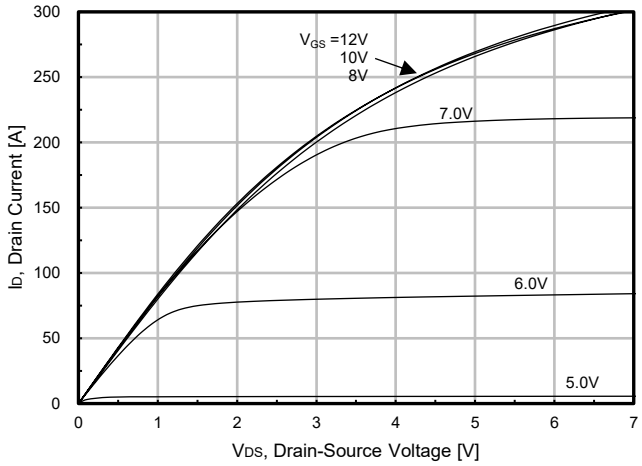


Fig. 1. Output Characteristics (25℃)

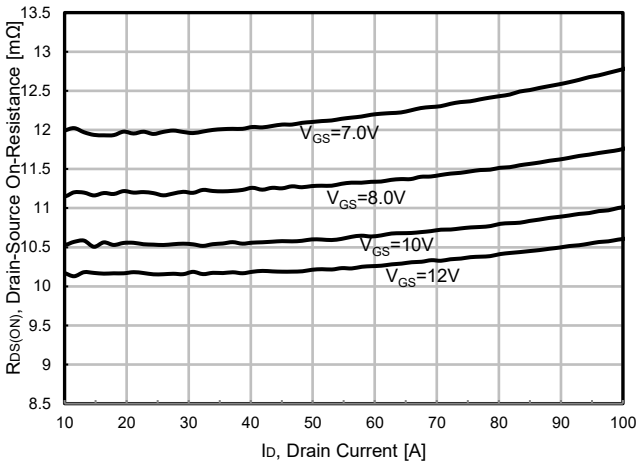


Fig. 2. Static On-Resistance Variation

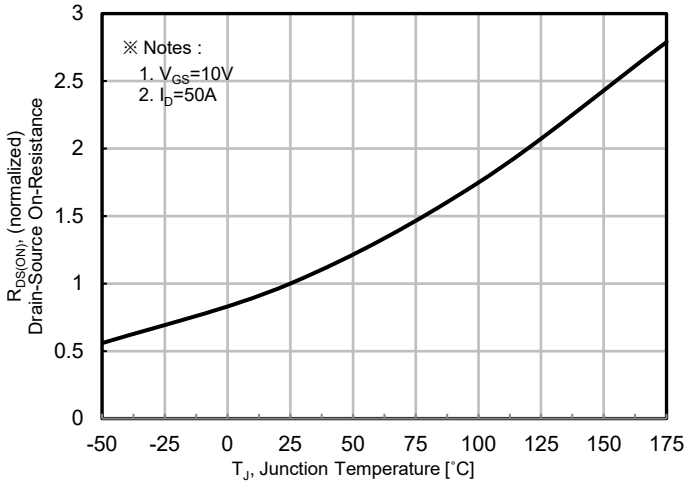


Fig. 3. On-Resistance vs. Junction Temperature

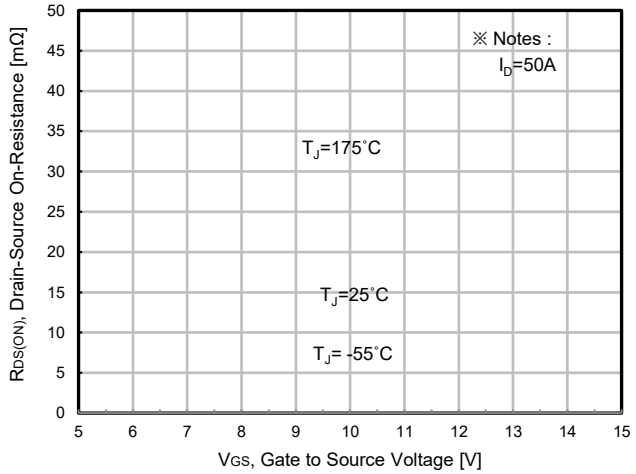


Fig. 4. On-Resistance vs. Gate to source Voltage

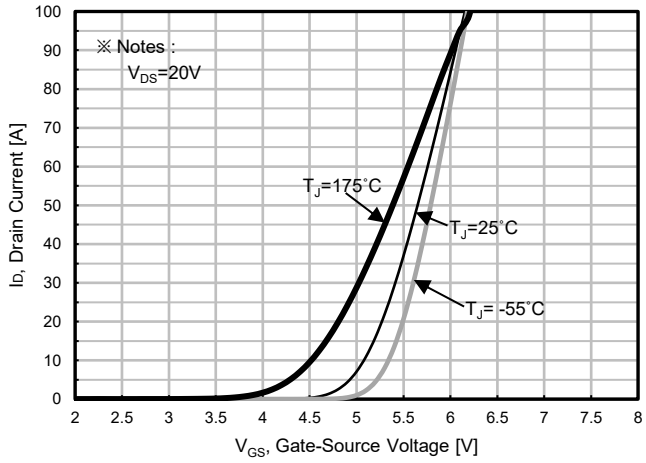


Fig. 5. Transfer Characteristics

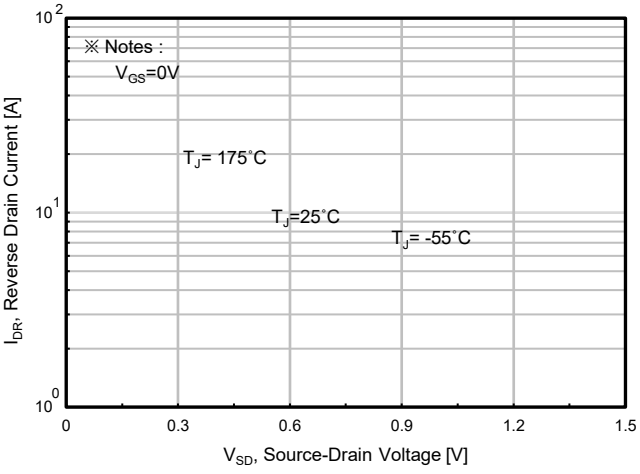


Fig. 6. Body Diode Forward Voltage Variation with Source Current and Temperature

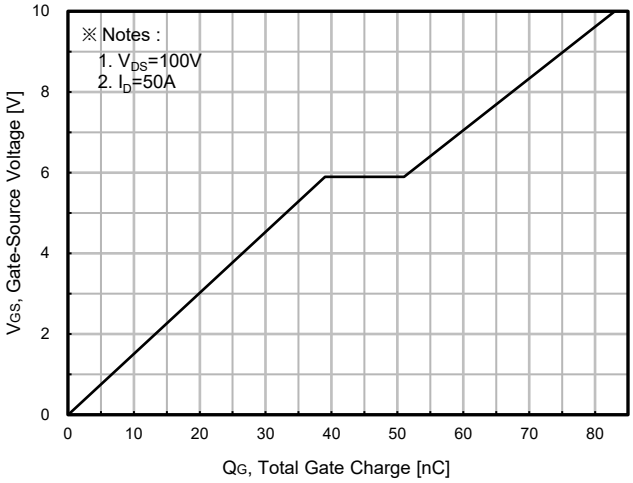


Fig. 7. Gate Charge

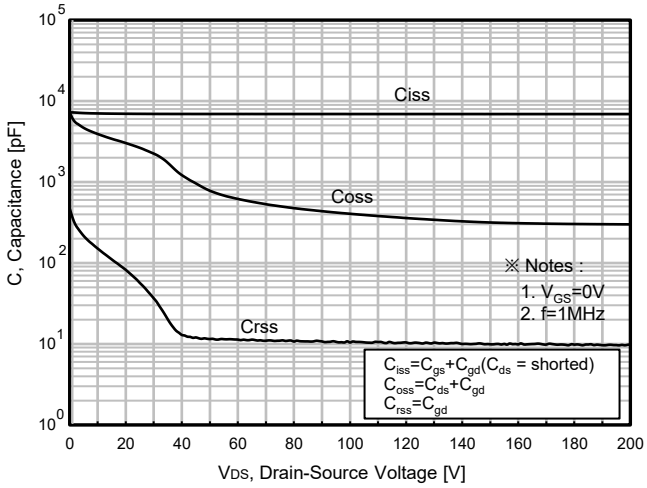


Fig. 8. Capacitance

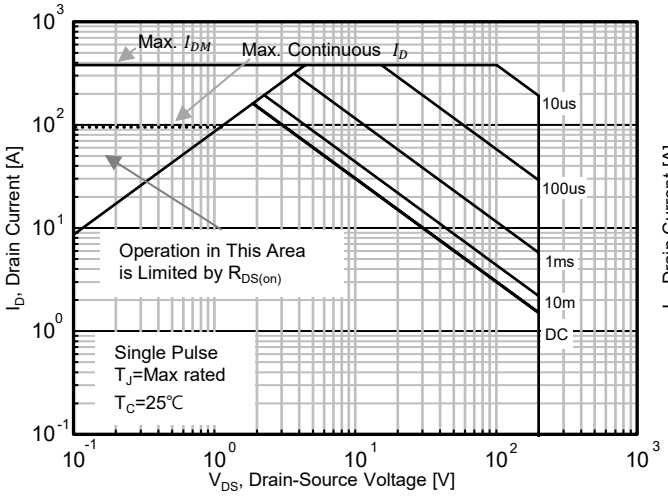


Fig. 9. Safe Operating Area, Junction-to-Ambient

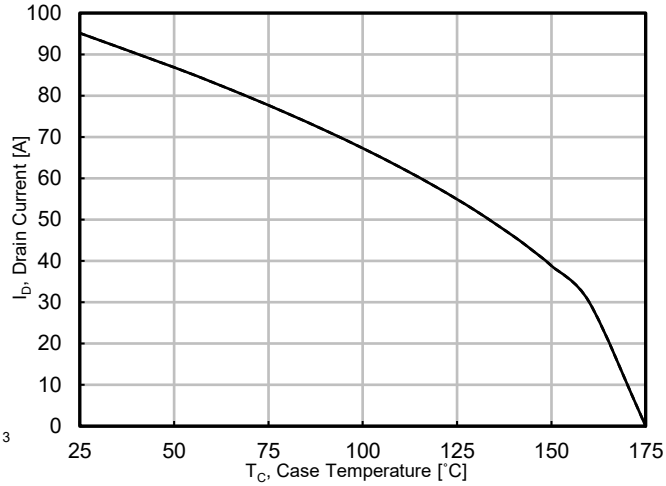


Fig. 10. Maximum Drain vs. Case Temperature

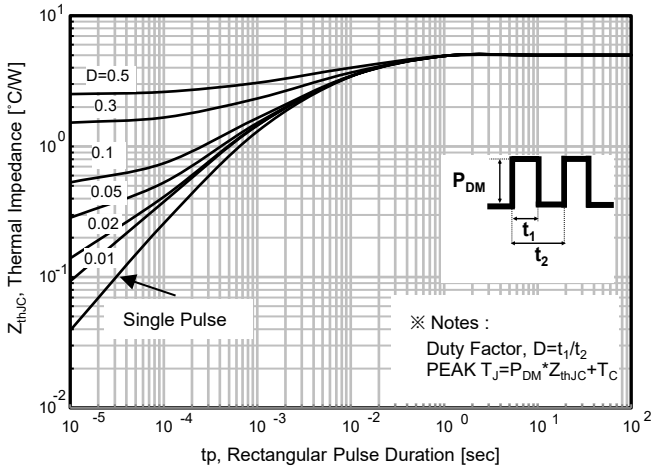


Fig. 11. Transient Thermal Impedance Junction to Case (Rthjc)

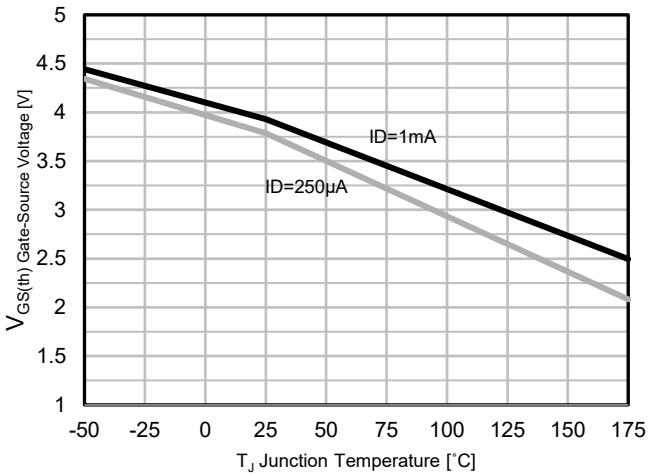


Fig.12 Gate -Source Threshold Voltage vs. Temperature

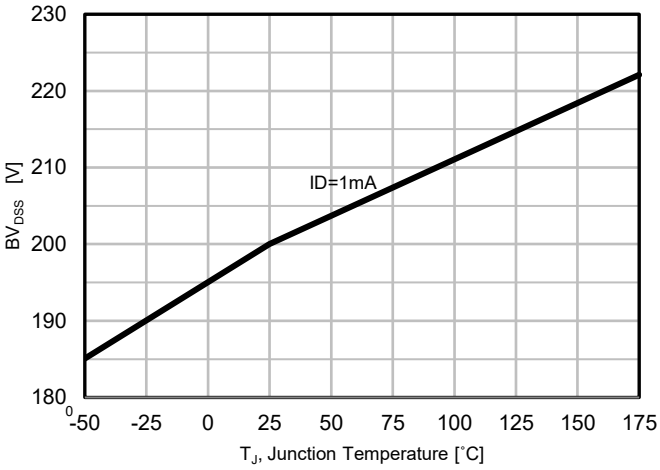
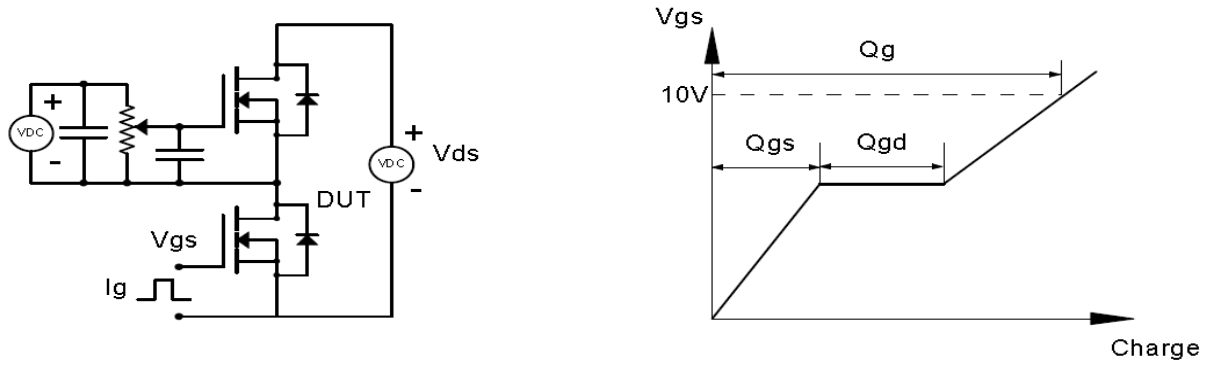


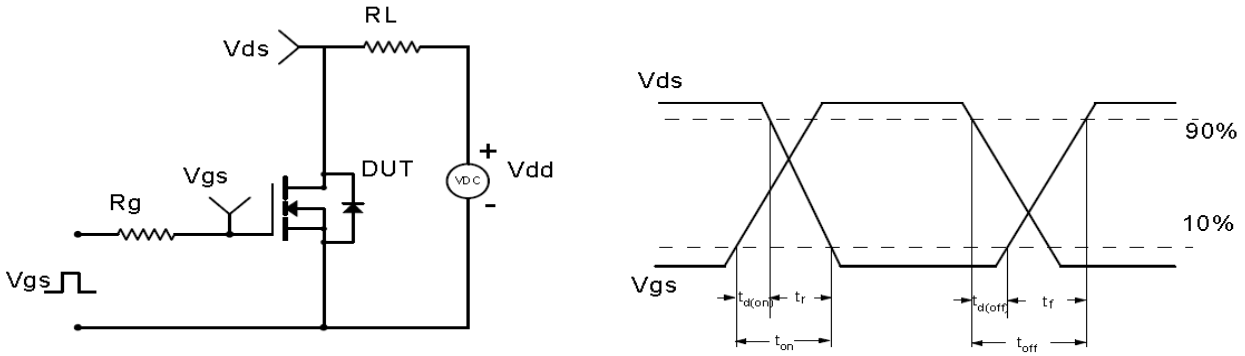
Fig.13 Drain-Source Voltage vs. Temperature

Test Circuit & Waveform

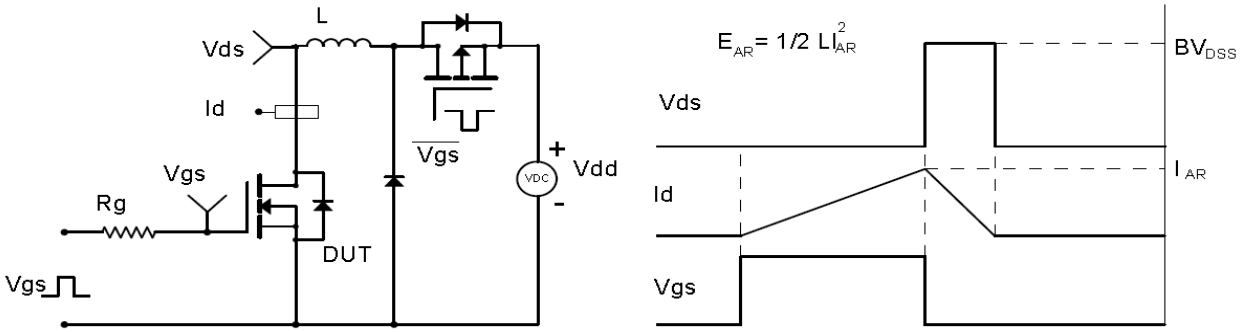
Gate Charge Test Circuit & Waveform



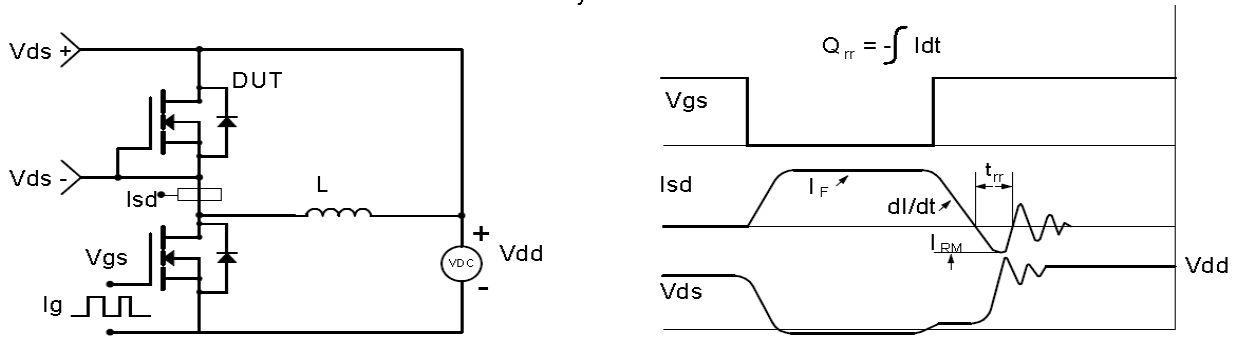
Resistive Switching Test Circuit & Waveforms



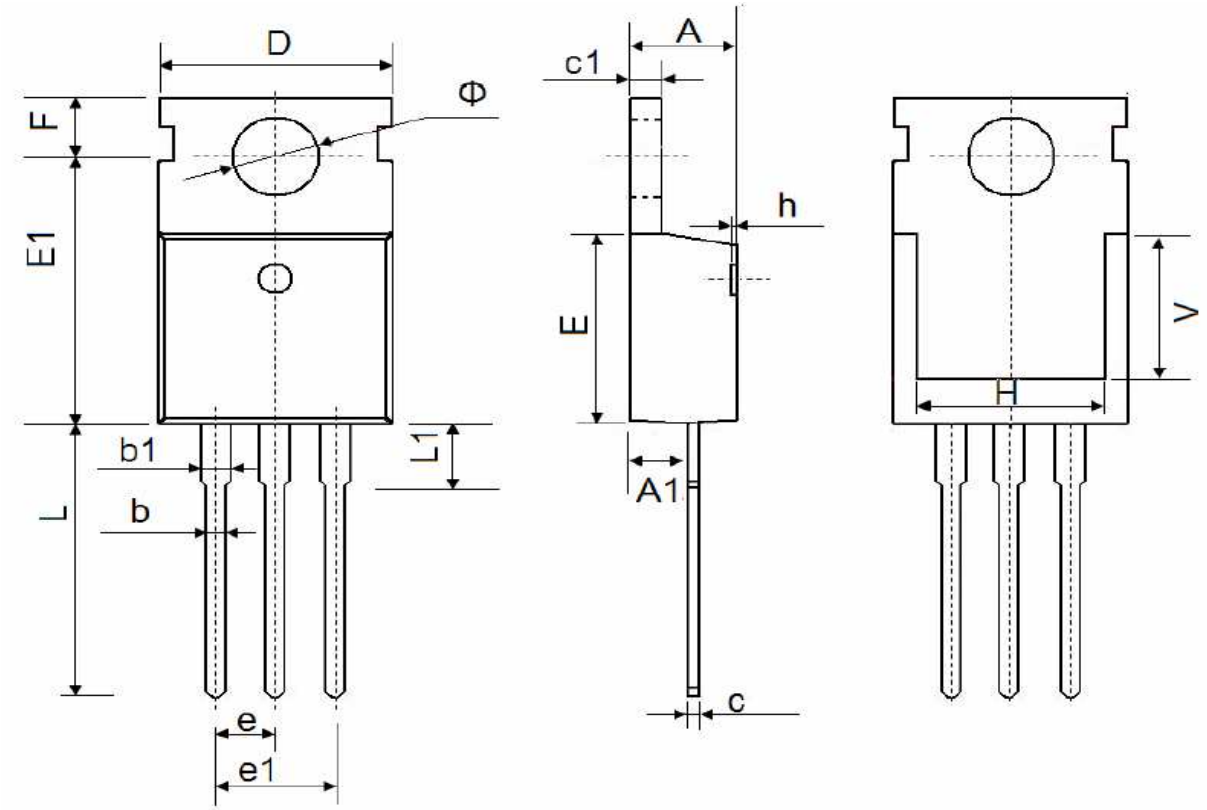
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

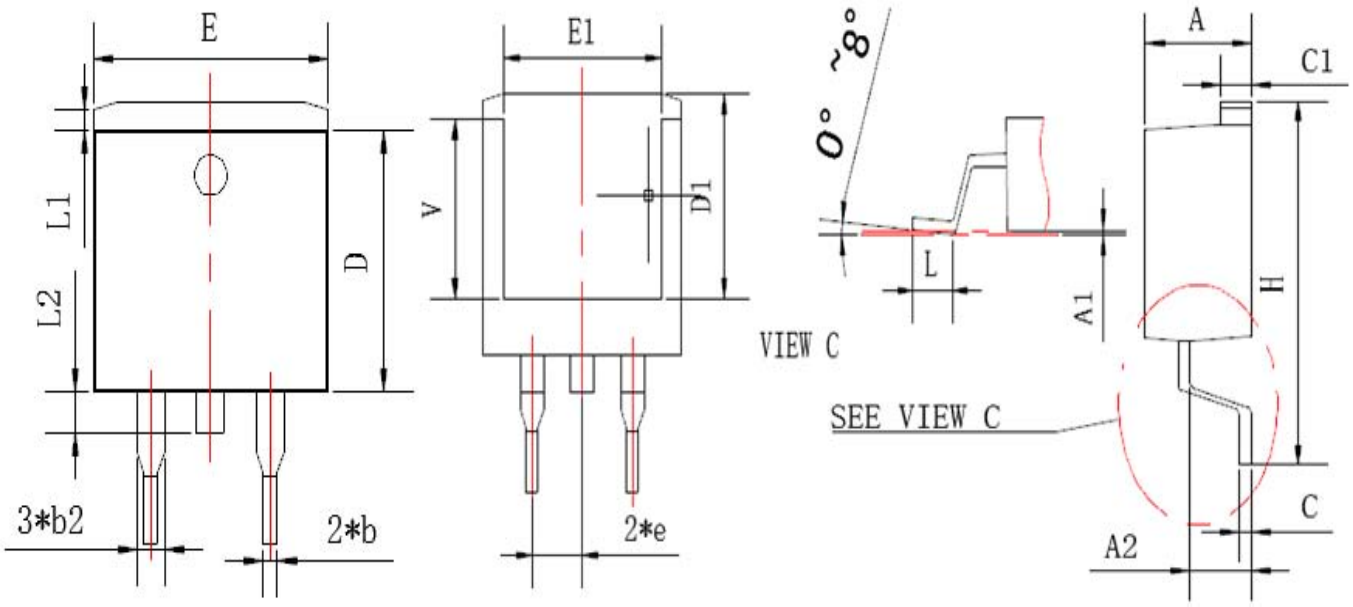


Package Outline: TO-220-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.30	4.80	0.169	0.189
A1	2.20	2.70	0.087	0.106
b	0.70	0.95	0.028	0.037
b1	1.10	1.50	0.043	0.059
c	0.40	0.65	0.016	0.026
c1	1.20	1.45	0.047	0.057
D	9.70	10.30	0.382	0.406
E	8.75	9.65	0.344	0.380
E1	12.50	13.10	0.492	0.516
e	2.540 Typ.		0.100 Typ.	
e1	4.98	5.18	0.196	0.204
F	2.60	3.00	0.102	0.118
H	7.00	8.40	0.276	0.331
h	0	0.3	0	0.012
L	12.75	13.90	0.502	0.547
L1	2.85	3.40	0.112	0.134
V	6.700Ref.		0.264Ref.	
Φ	3.50	3.80	0.138	0.150

Package Outline: TO-263



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.30	4.80	0.169	0.189
A1	0.00	0.25	0.000	0.010
A2	2.35	2.70	0.093	0.106
b	0.70	0.94	0.028	0.037
b2	1.15	1.35	0.045	0.053
C	0.35	0.65	0.014	0.026
C1	1.20	1.40	0.047	0.055
D	8.40	9.40	0.331	0.370
D1	7.80	8.10	0.307	0.319
e	2.540 Typ.		0.100 Typ.	
E	9.85	10.30	0.388	0.406
E1	7.00	8.50	0.276	0.335
H	15.00	15.70	0.591	0.618
L	2.30	2.80	0.091	0.110
L1	0.90	1.30	0.035	0.051
V	6.700Ref.		0.264Ref	
L2	1.00	1.50	0.039	0.059

Revision History

Revison	Date	Major changes
1.0	2022-07-15	Release of provisional version

Disclaimer

Unless otherwise specified in the datasheet, the product is designed and qulified as a standard commercial product and is not intended for use in applications that require extraordinary levels of quality and reliability, such as automotive, aviation/aerospace and life-support devices or systems.

Any and all semicondutor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.

Scilicon Electric reserves the right to improve product design,function and reliability without notice.