Features

- Low on resistance
- Low gate charge
- Fast switching
- High avalanche current
- Low reverse transfer capacitances

Product Summary

V_{DS}	200V
$R_{DS(on)}$ typ.	9.4mΩ
$I_{D(Silicon\ Limited)}$	132A

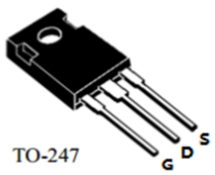
100% DVDS Tested

100% Avalanche Tested

RoHS

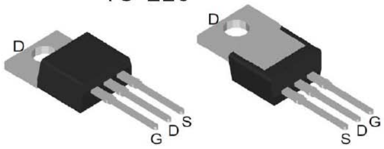
Application

- Brushed and BLDC Motor drive systems
- Battery Management
- DC/DC and AC/DC Converter
- UPS



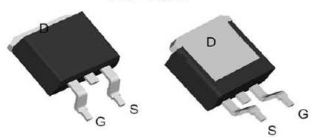
SFW107N200C3

TO-220

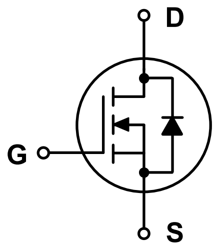


SFP110N200C3

TO-263



SFB107N200C3



Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
SFP110N200C3	110N200C3	TO-220	Tube	N/A	N/A	50pcs
SFB107N200C3	107N200C3	TO-263	Reel&Tape	330×24.8mm	24mm	800pcs
SFW107N200C3	107N200C3	TO-247	Tube	N/A	N/A	30pcs

Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	200	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25℃ (Silicon Limited)	I_D	132	A
	T_C = 100℃ (Silicon Limited)		93	
Pulsed Drain Current(Tc=25℃,t_p limited by T_{jmax})		$I_{D,Pulse}$	370	A
Single Pulsed Avalanche Energy(L=0.4mH,T_J=25℃)		E_{AS}	720	mJ
Power Dissipation	T_C = 25℃	P_{tot}	375	W
Junction Temperature		T_J	-55 ~ 175	℃
Storage Temperature		T_{STG}	-55 ~ 175	℃

Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance , junction – case	R_{thJC}	0.4	℃/W
Thermal resistance , junction – ambient(min. footprint)	R_{thJA}	62.5	℃/W

Electrical Characteristics (T_J = 25℃ unless otherwise noted)

Parameter	Symbol	Test Condition		Min	Type	Max	Unit
Static Characteristics							
Drain - Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = 250μA		200	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 200V, V_{GS} = 0V T_C=25℃ T_C=125℃		- -	- -	1 100	μA
Gate - Body Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V		-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA		2	3	4	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A	TO-220	-	9.4	11	mΩ
			TO-263	-	9.1	10.7	
			TO-247		8.7	10.7	
Dynamic Characteristics							
Input Capacitance	C_{iss}	V_{DS} = 100V, V_{GS} = 0V, f = 1MHz		-	4972	-	pF
Output Capacitance	C_{oss}			-	425	-	
Reverse Transfer Capacitance	C_{rss}			-	8	-	
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		-	4	-	Ω
Switching Characteristics							
Total Gate Charge	Q_g	V_{DS} = 100V, V_{GS} = 10V, I_D = 20A		-	58	-	nC
Gate-source Charge	Q_{gs}			-	19	-	
Gate-drain Charge	Q_{gd}			-	7	-	
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 100V, V_{GS} = 10V, I_D = 20A, R_G=10Ω		-	17	-	ns
Turn-on Rise Time	t_r			-	23	-	
Turn-off Delay Ttime	$t_{d(off)}$			-	38	-	
Turn-off Fall Time	t_f			-	12	-	

Body Diode Characteristic

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Diode continous forward current	I_S	-	-	-	100	A
Diode pulse current	$I_{S,pulse}$	Pulsed, tp ≤ 10 μs	-	-	370	A
Body Diode Forward Voltage	V_{SD}	V_{GS} = 0V,I_{SD} = 20A	-	0.9	1.4	V
Body Diode Reverse Recovery Time	T_{rr}	I_F = 20A,di/dt = 100A/μs	-	144	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F = 20A,di/dt = 100A/μs	-	635	-	nC

Typical Performance Characteristics

Fig 1. Typical Output Characteristics

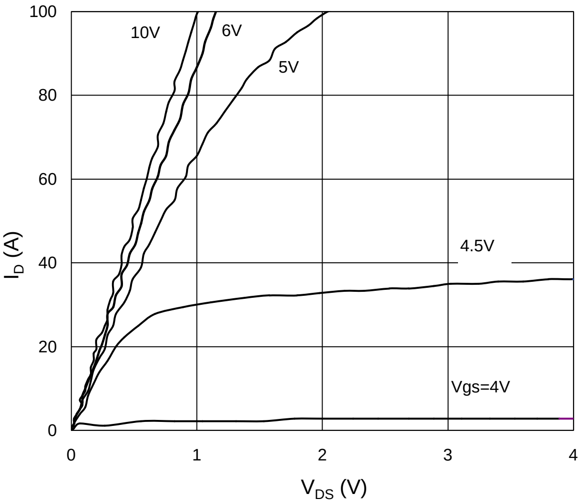


Figure 2. On-Resistance vs. Gate-Source Voltage

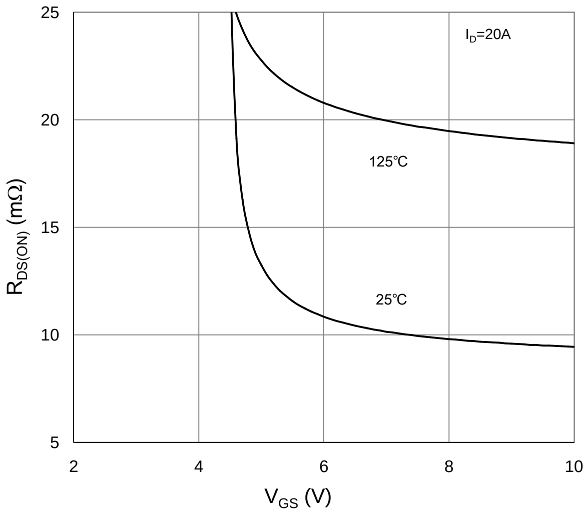


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

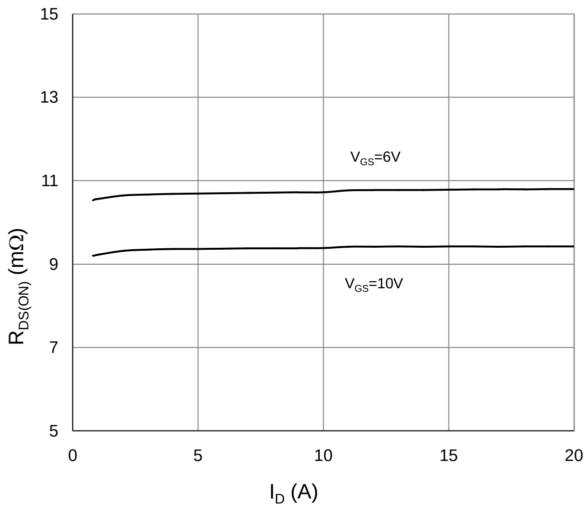


Figure 4. Normalized On-Resistance vs. Junction Temperature

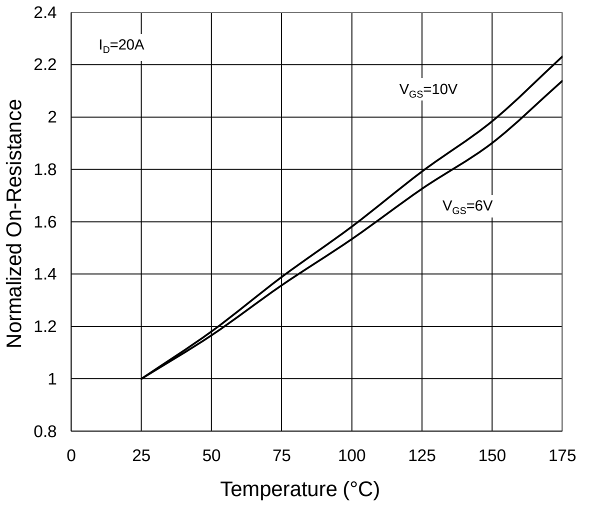


Figure 5. Typical Transfer Characteristics

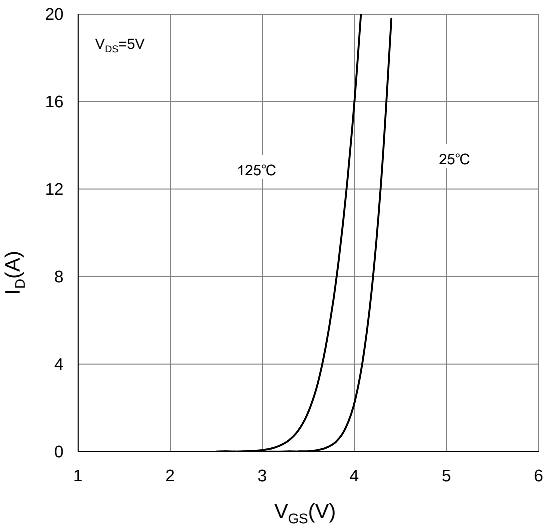


Figure 6. Typical Source-Drain Diode Forward Voltage

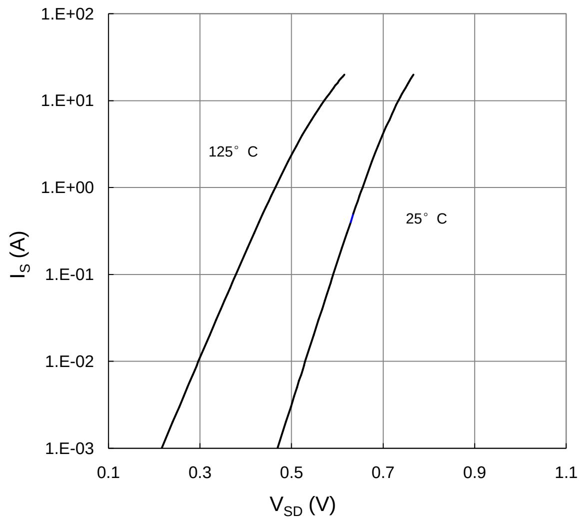


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

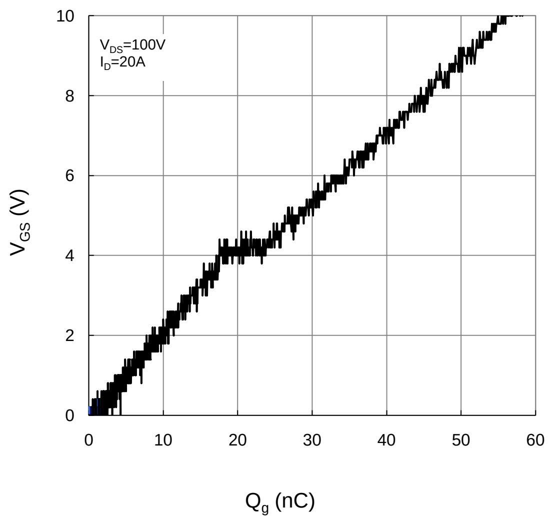


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

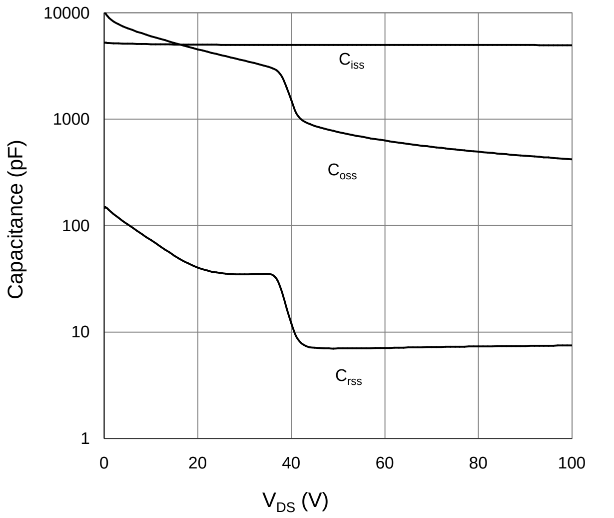


Figure 9. Maximum Safe Operating Area

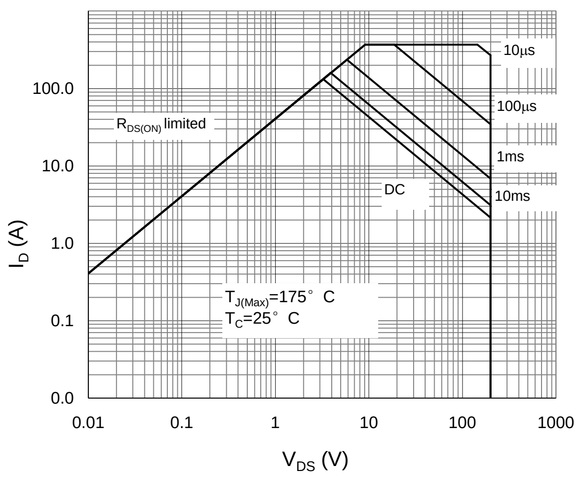


Figure 10. Maximun Drain Current vs. Case Temperature

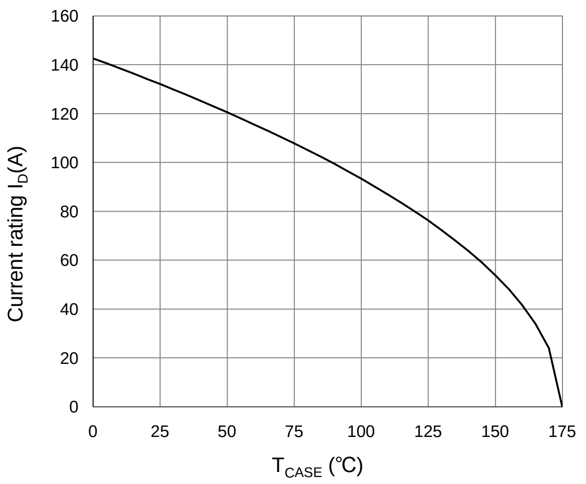
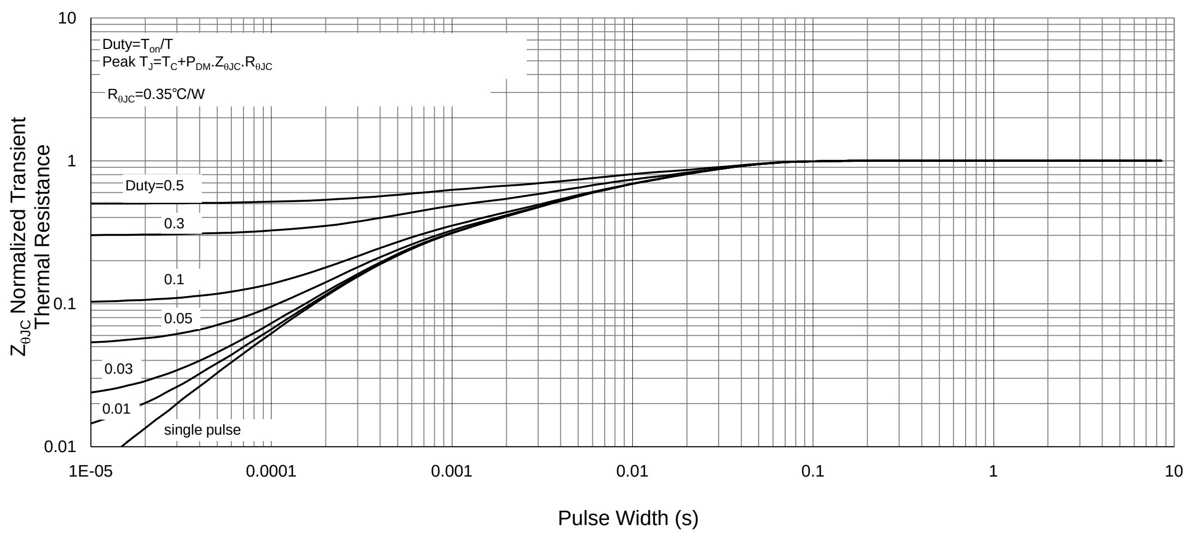
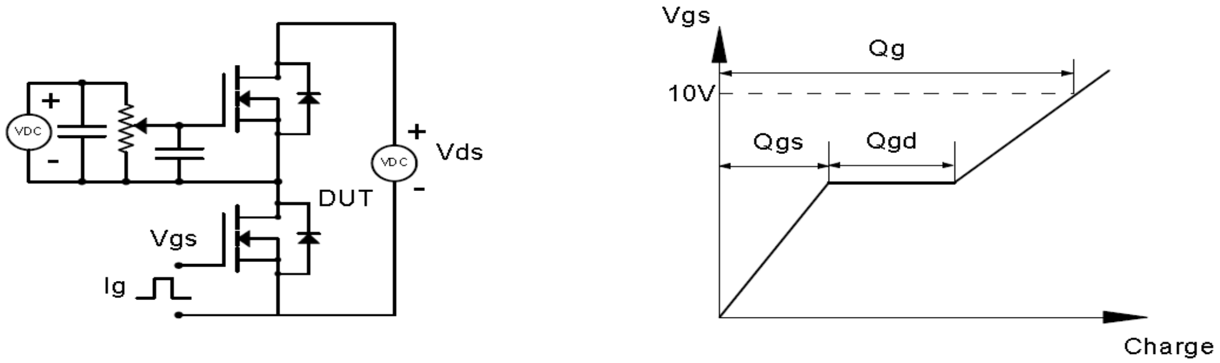


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case

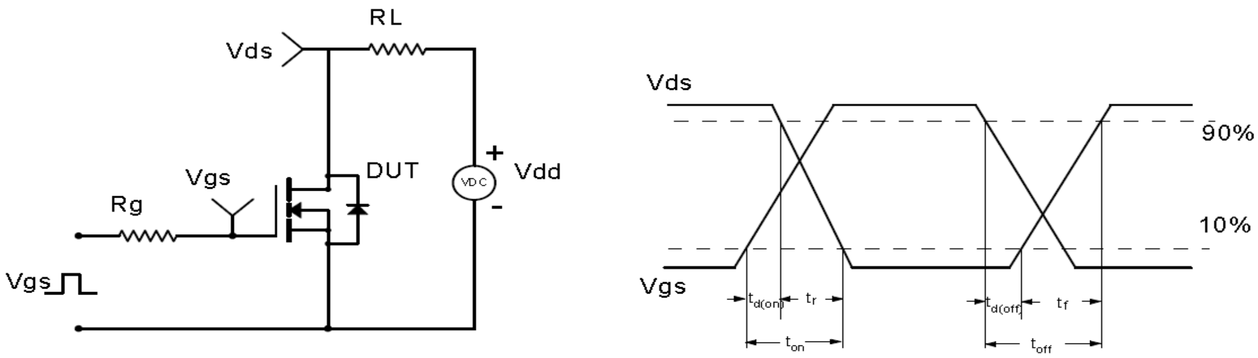


Test Circuit & Waveform

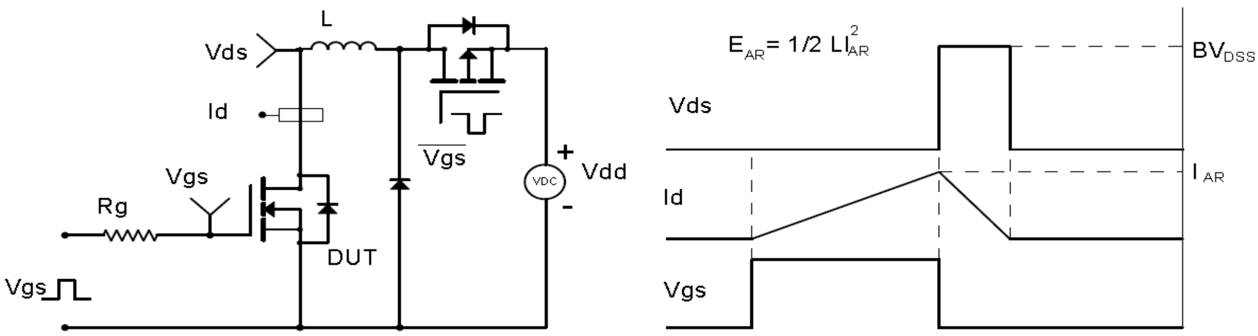
Gate Charge Test Circuit & Waveform



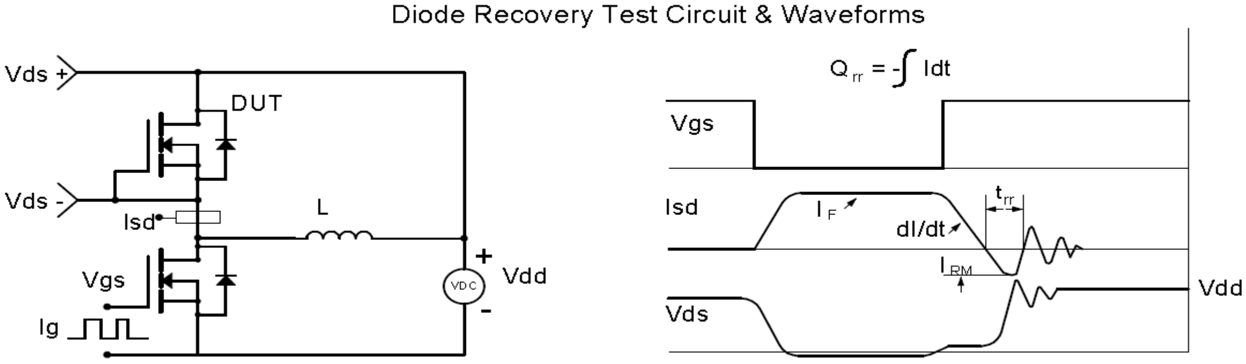
Resistive Switching Test Circuit & Waveforms



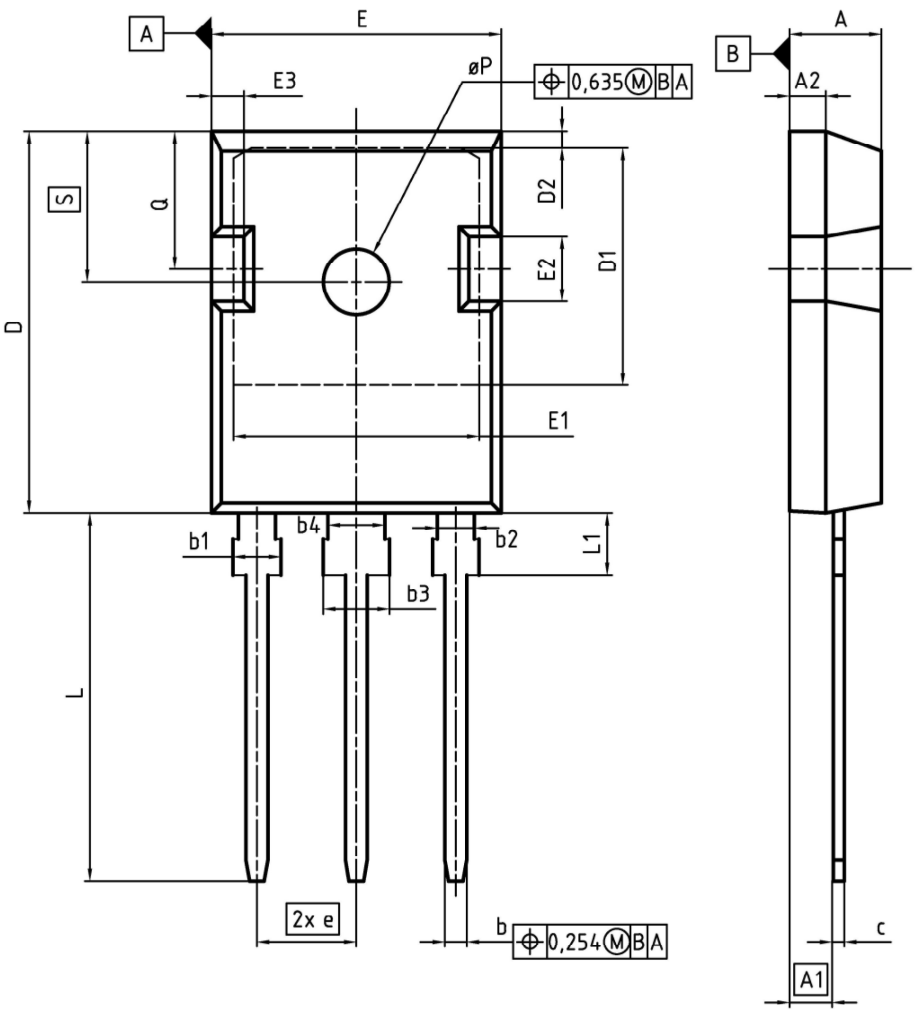
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



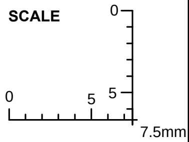
Package Outlines TO-247



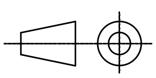
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.83	5.21	0.190	0.205
A1	2.27	2.54	0.089	0.100
A2	1.85	2.16	0.073	0.085
b	1.07	1.33	0.042	0.052
b1	1.90	2.41	0.075	0.095
b2	1.90	2.16	0.075	0.085
b3	2.87	3.38	0.113	0.133
b4	2.87	3.13	0.113	0.123
c	0.55	0.68	0.022	0.027
D	20.80	21.10	0.819	0.831
D1	16.25	17.65	0.640	0.695
D2	0.95	1.35	0.037	0.053
E	15.70	16.13	0.618	0.635
E1	13.10	14.15	0.516	0.557
E2	3.68	5.10	0.145	0.201
E3	1.00	2.60	0.039	0.102
e	5.44 (BSC)		0.214 (BSC)	
N	3		3	
L	19.80	20.32	0.780	0.800
L1	4.10	4.47	0.161	0.176
øP	3.50	3.70	0.138	0.146
Q	5.49	6.00	0.216	0.236
S	6.04	6.30	0.238	0.248

DOCUMENT NO.
SLC247-3005

SCALE



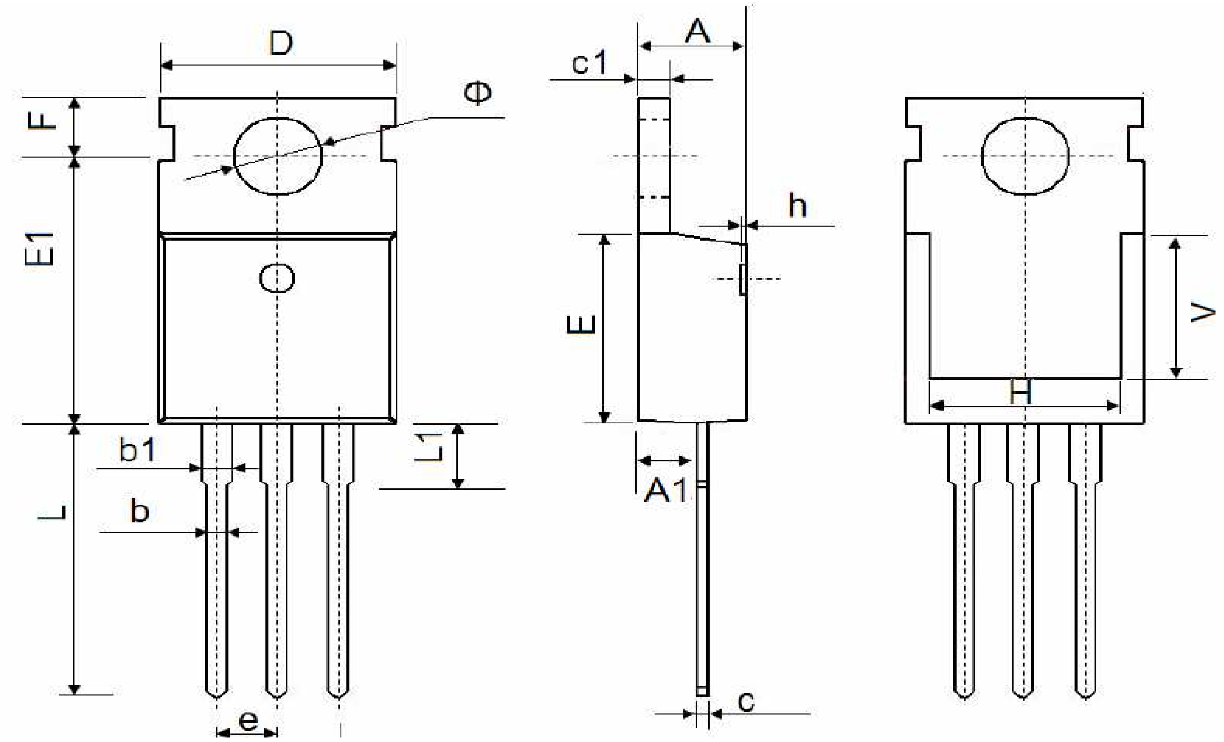
ASIAN PROJECTION



ISSUE DATE
24-02-2020

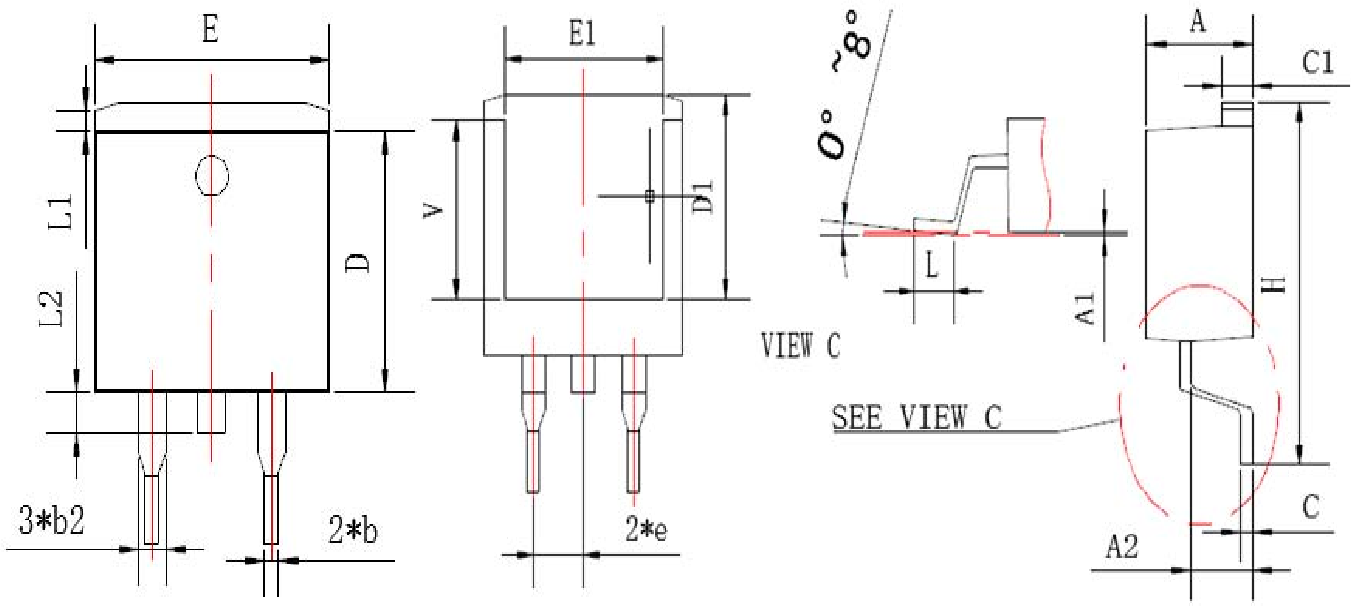
REVISION
01

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	0.276	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

Revision	Date	Major Changes
1.0	2021-03-23	Release of formal 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.