

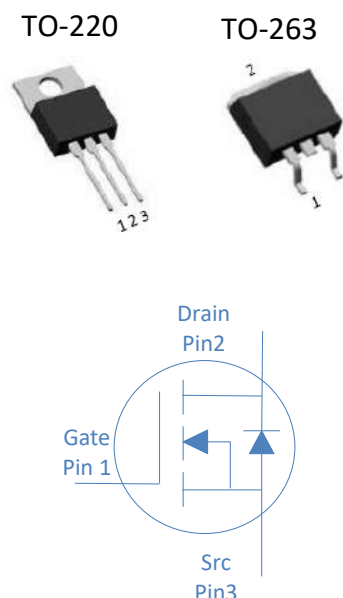
100V N-Ch Power MOSFET

Feature

- ◇ High Speed Power Switching, Logic Level
- ◇ Enhanced Body diode dv/dt capability
- ◇ Enhanced Avalanche Ruggedness
- ◇ 100% UIS Tested, 100% Rg Tested
- ◇ Lead Free, Halogen Free

Application

- ◇ Synchronous Rectification in SMPS
- ◇ Hard Switching and High Speed Circuit
- ◇ DC/DC in Telecoms and Industrial



Part Number	Package	Marking
KUGB080N10SL	TO-263	GB080N10SL
KEGP080N10SL	TO-220	GP080N10SL

V_{DS}		100	V
$R_{DS(on),typ@V_{GS}=10V}$	TO-263	6.5	m Ω
$R_{DS(on),typ@V_{GS}=4.5V}$	TO-263	8.0	m Ω
$R_{DS(on),typ@V_{GS}=10V}$	TO-220	6.5	m Ω
$R_{DS(on),typ@V_{GS}=4.5V}$	TO-220	8.0	m Ω
I_D		83	A

Absolute Maximum Ratings at $T_J=25^\circ\text{C}$ (unless otherwise specified)

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	83	A
		$T_C=100^\circ\text{C}$	52	
Drain to Source Voltage	V_{DS}	-	100	V
Gate to Source Voltage	V_{GS}	-	± 20	V
Pulsed Drain Current	I_{DM}	-	260	A
Avalanche Energy, Single Pulse	E_{AS}	$L=0.4\text{mH}$, $T_C=25^\circ\text{C}$	245	mJ
Power Dissipation	P_D	$T_C=25^\circ\text{C}$	104	W
Operating and Storage Temperature	T_J , T_{stg}	-	-55 to 150	$^\circ\text{C}$

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Thermal Resistance Junction-Case	$R_{\theta JC}$	1.2	$^\circ\text{C/W}$

Electrical Characteristics at $T_j=25^\circ\text{C}$ (unless otherwise specified)

Static Characteristics

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.4	1.8	2.4	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS}=0V, V_{DS}=100V, T_j=25^\circ\text{C}$	-	-	1	μA
		$V_{GS}=0V, V_{DS}=100V, T_j=100^\circ\text{C}$	-	-	100	
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Drain to Source on Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$ TO-263	-	6.5	8	$m\Omega$
Drain to Source on Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=10A$ TO-263	-	8	10.5	$m\Omega$
Drain to Source on Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$ TO-220	-	6.5	8	$m\Omega$
Drain to Source on Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=10A$ TO-220	-	8	10.5	$m\Omega$
Transconductance	g_{fs}	$V_{DS}=5V, I_D=20A$	-	60	-	S
Gate Resistance	R_G	$V_{GS}=0V, V_{DS}$ Open, $f=1\text{MHz}$	-	1.9	-	Ω

Dynamic Characteristics

Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=50V, f=1\text{MHz}$	-	2113	-	pF
Output Capacitance	C_{oss}		-	597	-	
Reverse Transfer Capacitance	C_{rss}		-	11.5	-	
Total Gate Charge	$Q_g(10V)$	$V_{DD}=50V, I_D=20A, V_{GS}=10V$	-	34	-	nC
Total Gate Charge	$Q_g(4.5V)$		-	17	-	
Gate to Source Charge	Q_{gs}		-	7	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	6	-	
Turn on Delay Time	$t_{d(on)}$	$V_{DD}=50V, I_D=20A, V_{GS}=10V$	-	14	-	ns
Rise time	t_r		-	6	-	
Turn off Delay Time	$t_{d(off)}$		-	28	-	
Fall Time	t_f		-	5	-	

Reverse Diode Characteristics

Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_F=20A$	-	0.9	1.2	V
Reverse Recovery Time	t_{rr}	$V_R=50V, I_F=20A, dI_F/dt=500A/\mu s$	-	31	-	ns
Reverse Recovery Charge	Q_{rr}		-	103	-	nC

Fig 1. Typical Output Characteristics

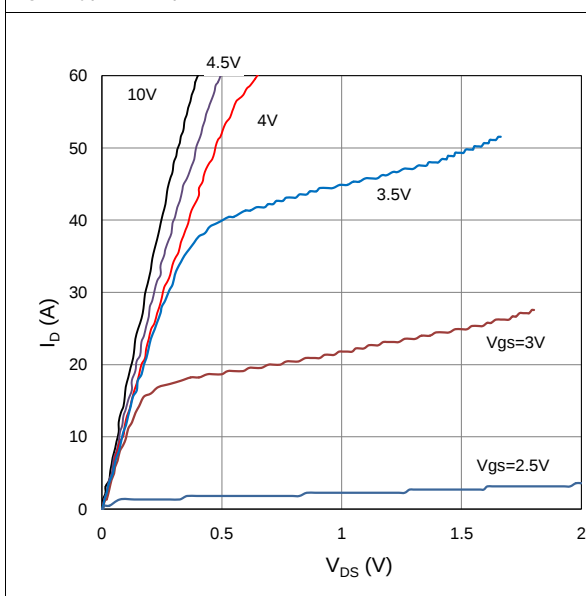


Figure 2. On-Resistance vs. Gate-Source Voltage

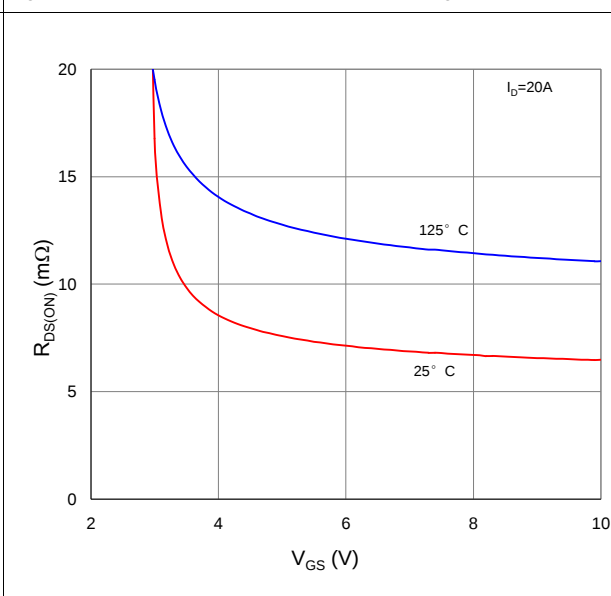


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

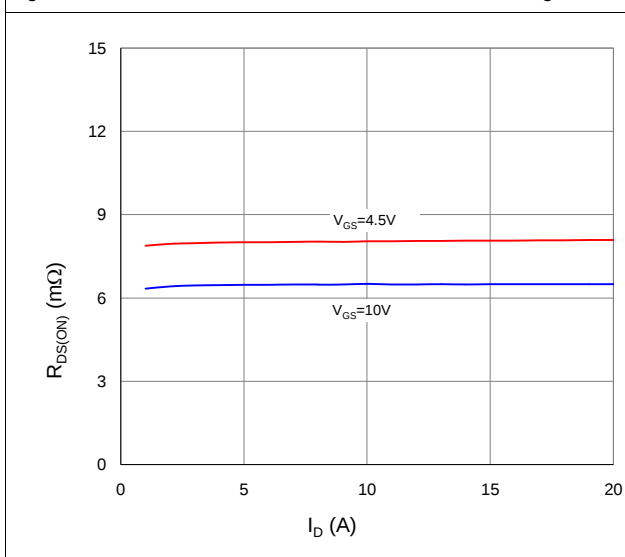


Figure 4. Normalized On-Resistance vs. Junction Temperature

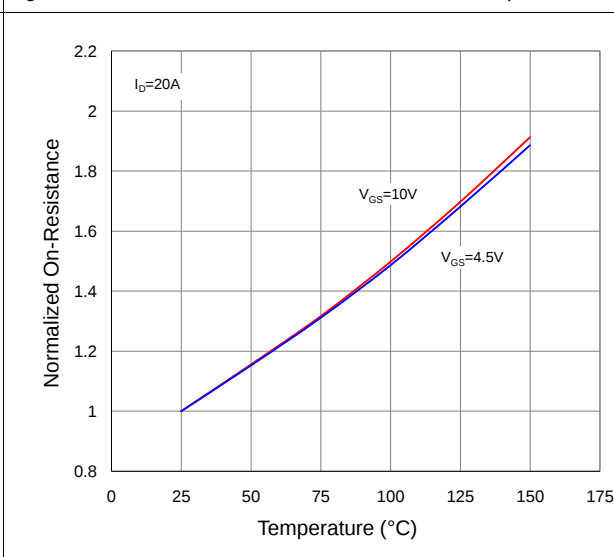


Figure 5. Typical Transfer Characteristics

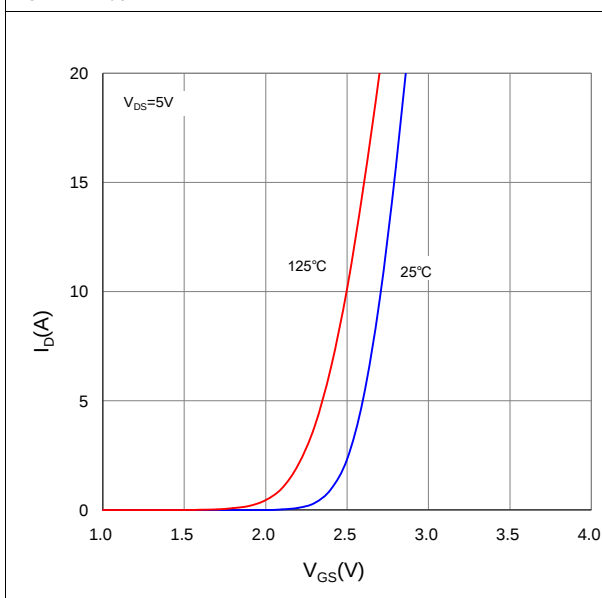


Figure 6. Typical Source-Drain Diode Forward Voltage

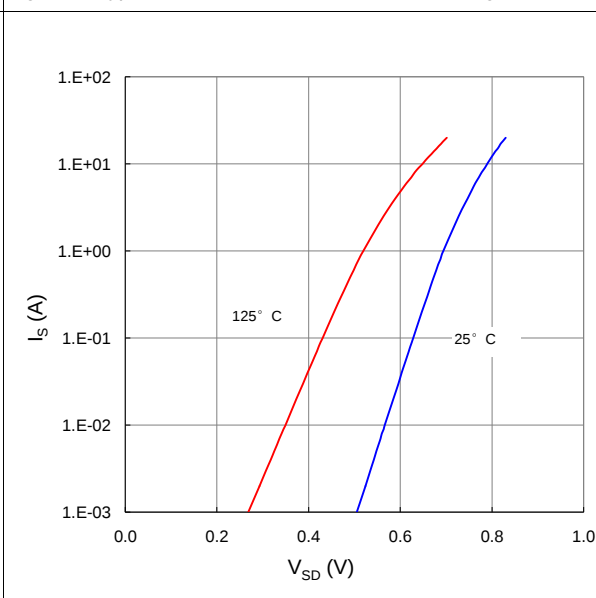


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

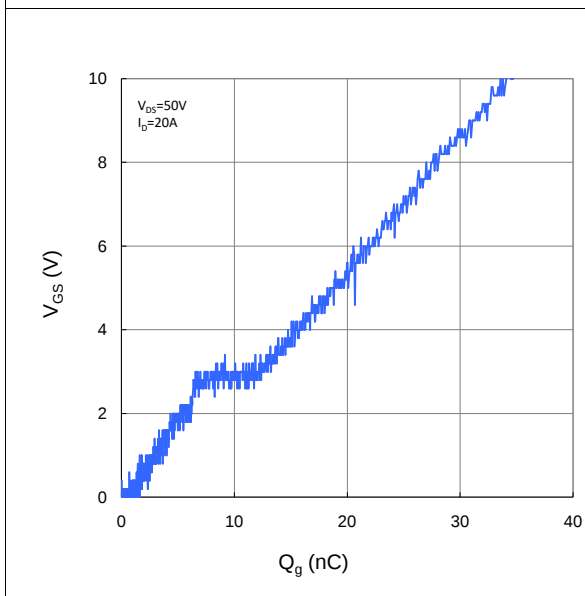


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

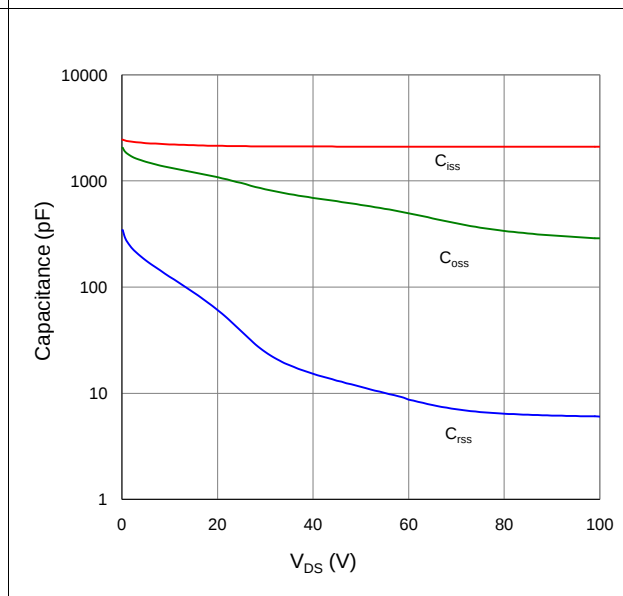


Figure 9. Maximum Safe Operating Area

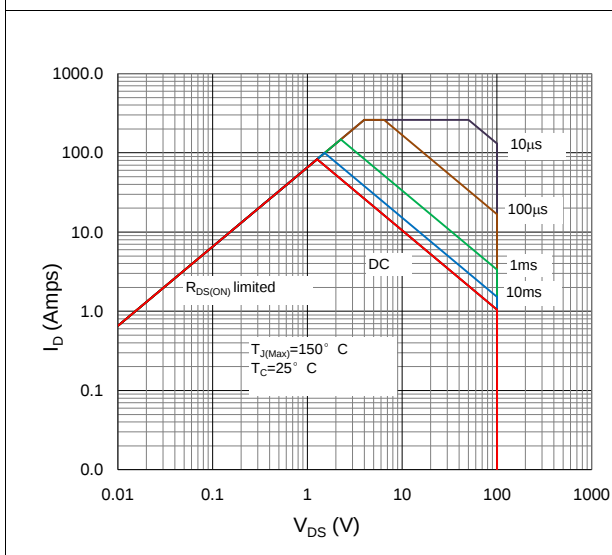


Figure 10. Maximum Drain Current vs. Case Temperature

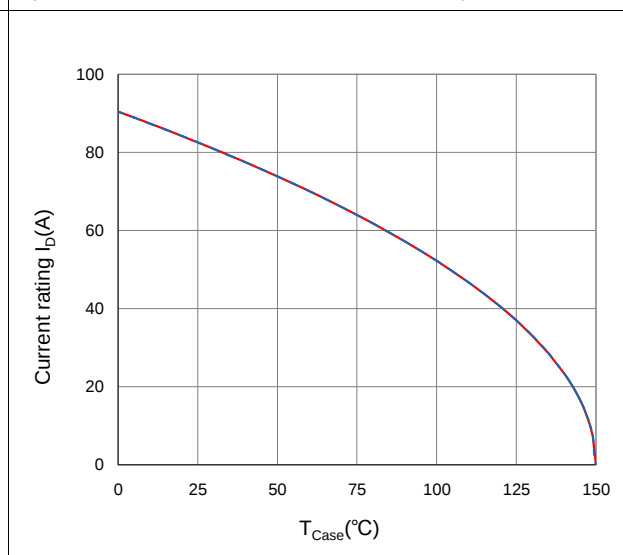
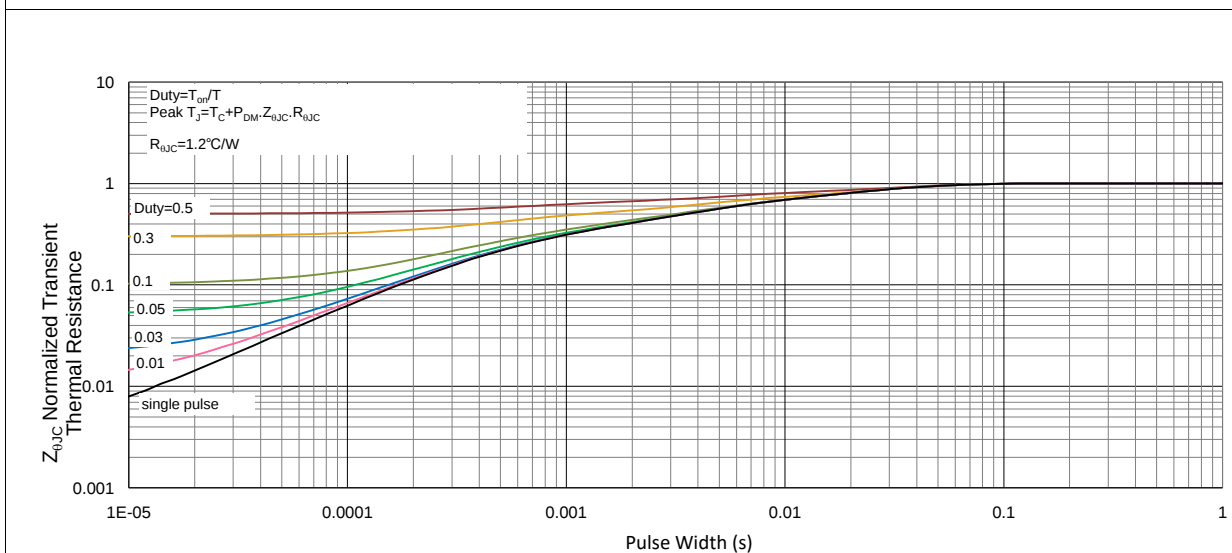
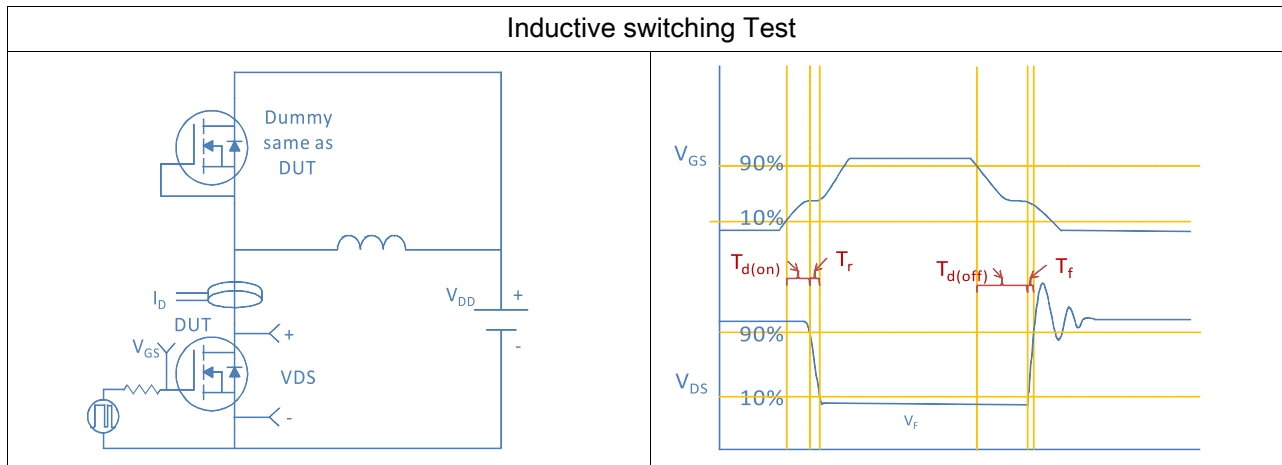


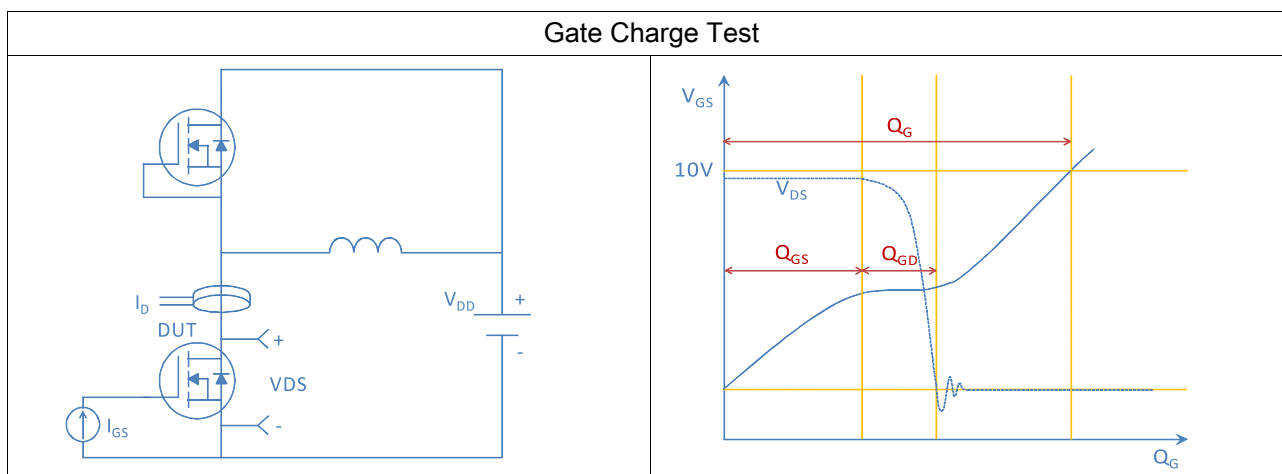
Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case



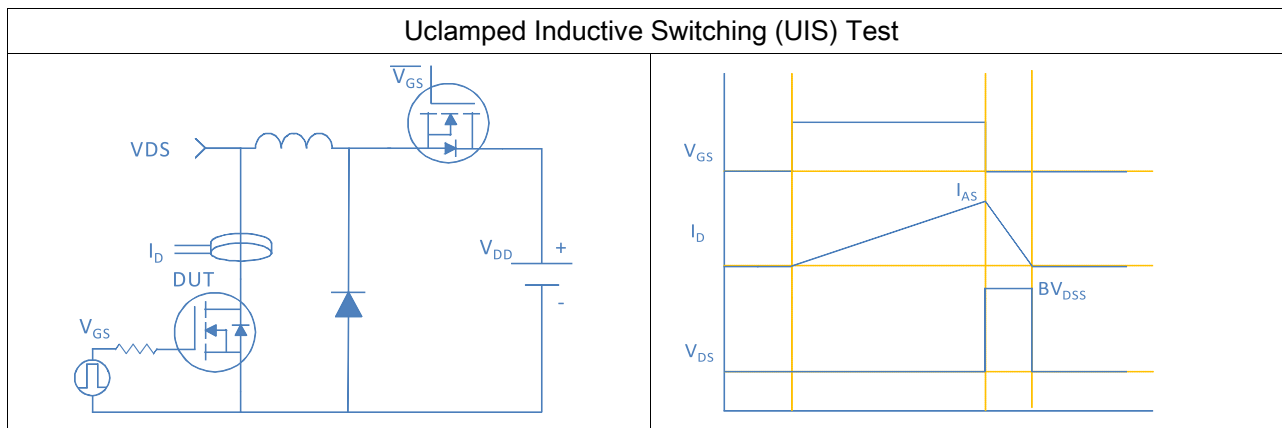
Inductive switching Test



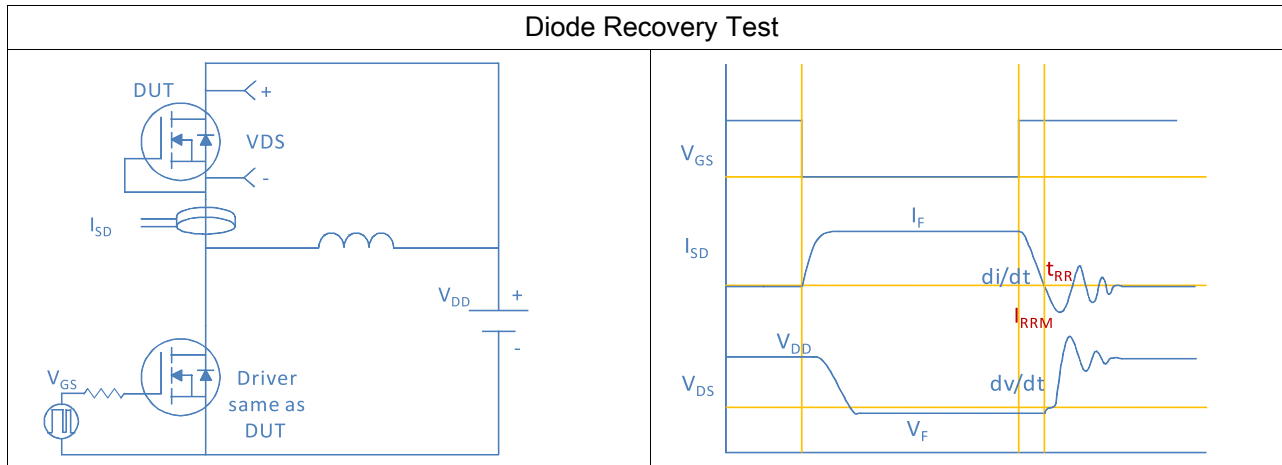
Gate Charge Test



Uclamped Inductive Switching (UIS) Test

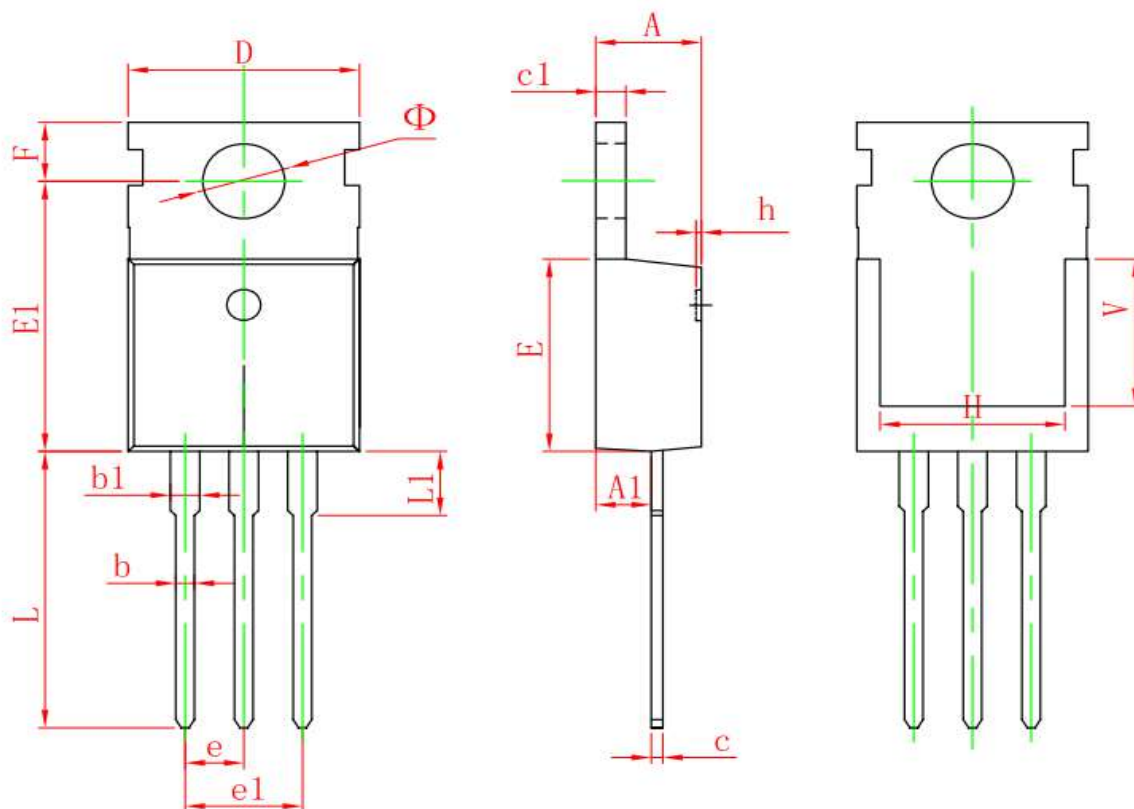


Diode Recovery Test



Package Outline

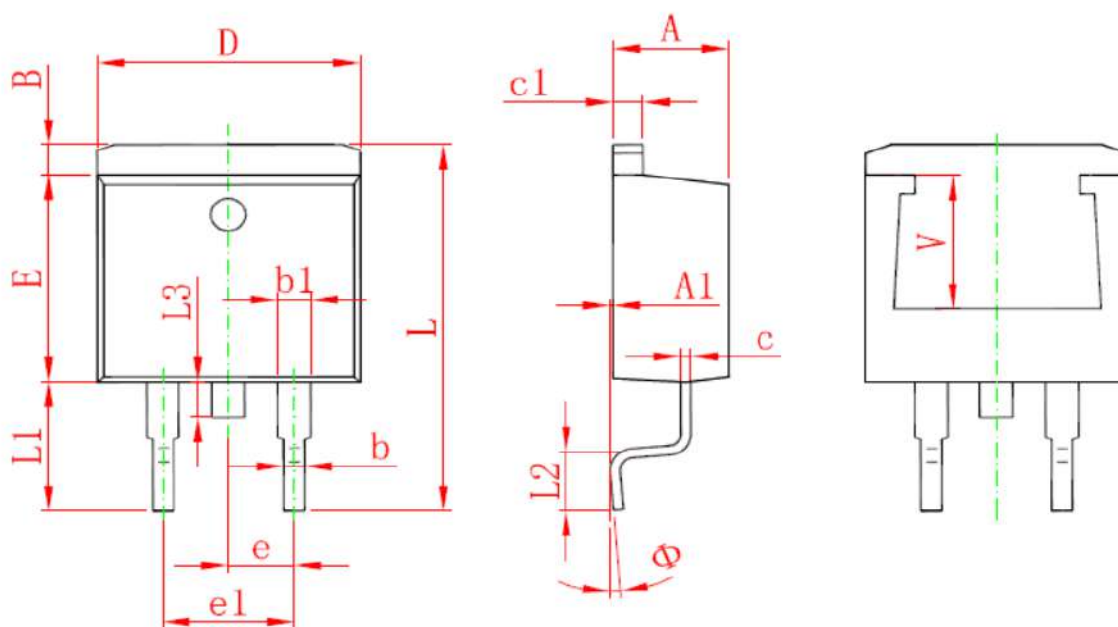
TO-220, 3 leads



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.514
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
Φ	3.400	3.800	0.134	0.150

Package Outline

TO-263, 3 leads



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.120	1.420	0.044	0.056
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
L	14.940	15.500	0.588	0.610
L1	4.950	5.450	0.195	0.215
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
Φ	0°	8°	0°	8°
V	5.600 REF.		0.220 REF.	