T

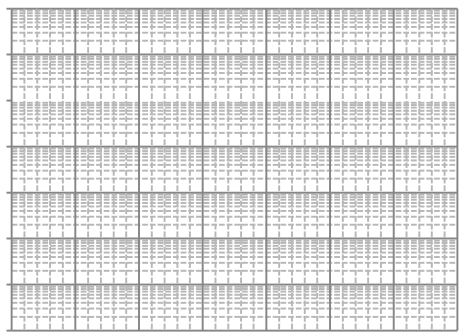
650V N-Channel Super Junction MOSFETAbsolute Maximum Ratings

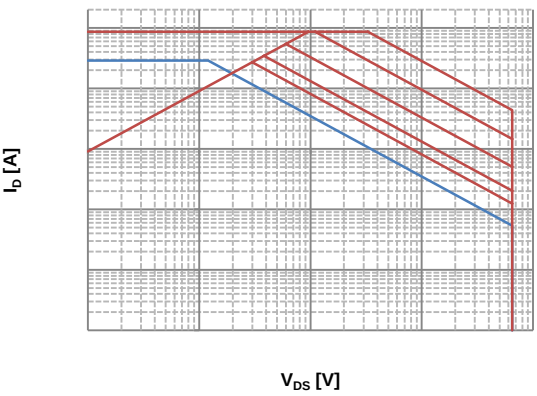
Electrical Characteristics T_J=25 C unless otherwise specified

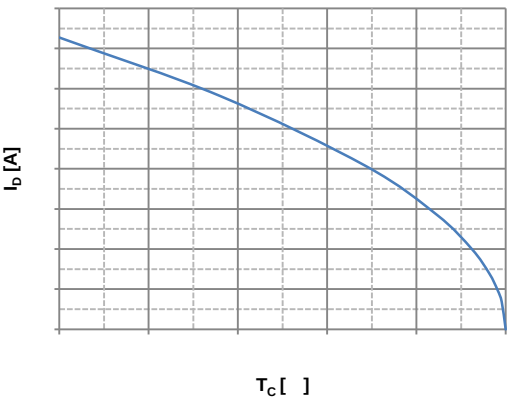
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
On Characteristics						
V_{GS}	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 1.29 mA	2.0	-	4.0	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS} = 10 V, I_D = 11.9 A	-	96	110	
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = 1mA	650	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 650 V, V_{GS} = 0	-	-	1	
		V_{DS} = 650 V, T_C = 150	-	-	100	
I_{GSS}	Gate-Body Leakage Current	V_{GS} = 20 V, V_{DS} = 0 V	-	-	1	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 400 V, V_{GS} = 0 V, f = 1.0 MHz	-	3300	-	pF
C_{oss}	Output Capacitance		-	69	-	pF
C_{rss}	Reverse Transfer Capacitance		-	3.7	-	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Time	V_{DS} = 325 V, I_D = 16.7 A, R_G (Note 3,4)	-	63	-	ns
t_r	Turn-On Rise Time		-	32	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	281	-	ns
t_f	Turn-Off Fall Time		-	20	-	ns
$Q_{g(}$	Total Gate Charge	V_{DS} = 520 V, I_D = 16.7 A, V_{GS} = 10 V (Note 3,4)	-	75	-	nC
Q_{gs}	Gate-Source Charge		-	14	-	nC
Q_{gd}	Gate-Drain Charge		-	22	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain-Source Diode Forward Current		-	-	29.1	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current		-	-	87	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} = 0 V, I_S = 16.7 A	-	-	1.3	V
trr	Reverse Recovery Time	V_R = 400 V, I_F = 16.7 A di_F/dt = 100 A/	-	TBD	-	ns
Qrr	Reverse Recovery Charge		-	TBD	-	

Notes :

1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. I_{AS}=3.4A V_{DD}




I_D [A]
V_{DS} [V]


I_D [A]
T_C [ ]

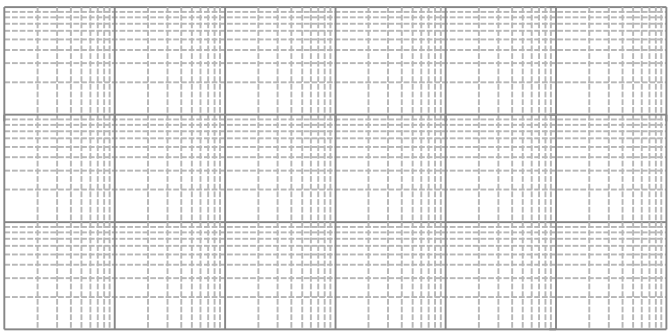


Fig 12. Gate Charge Test Circuit & Waveform

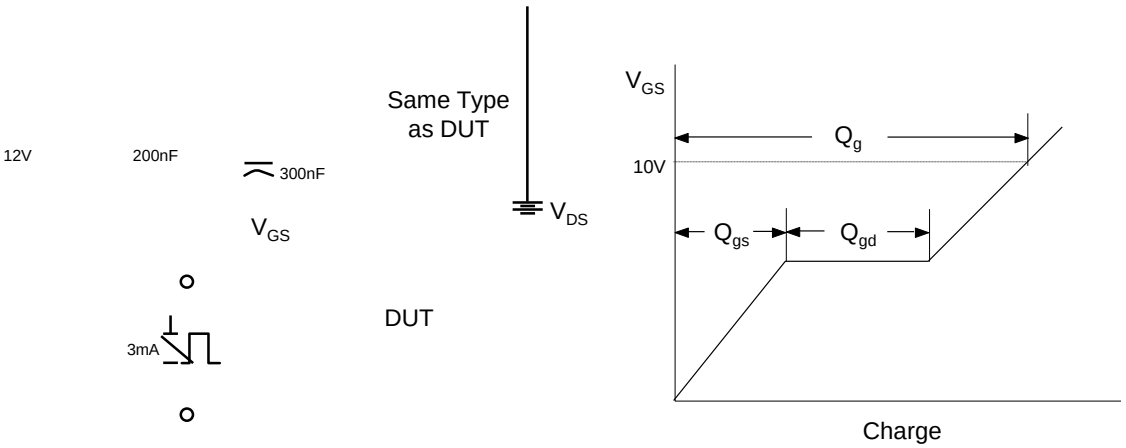


Fig 13. Resistive Switching Test Circuit & Waveforms

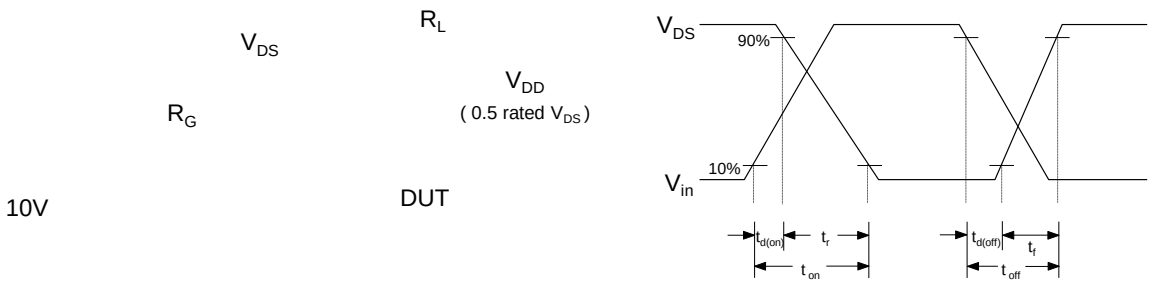


Fig 14. Unclamped Inductive Switching Test Circuit & Waveforms

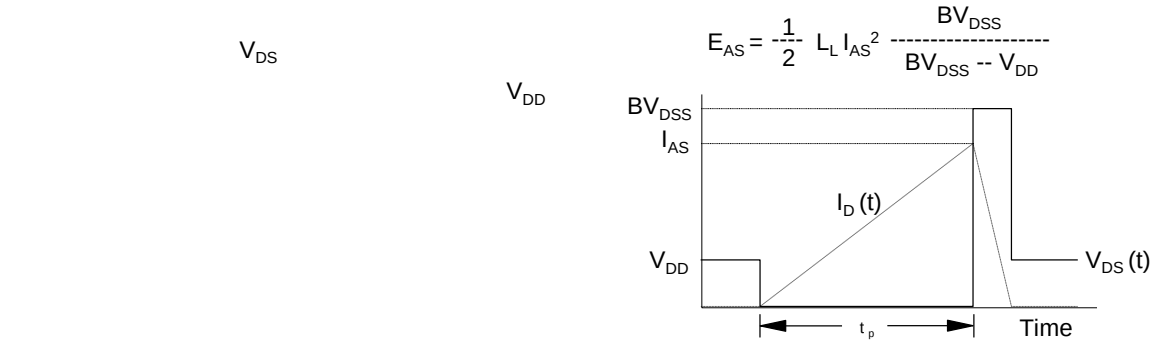
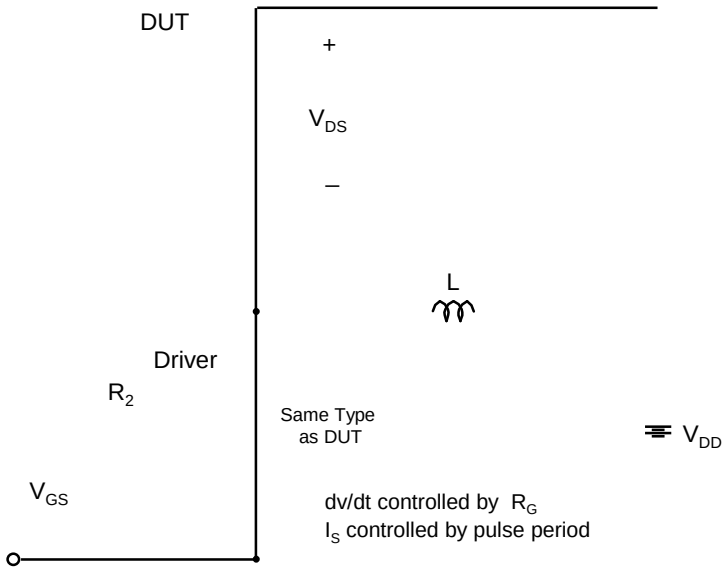
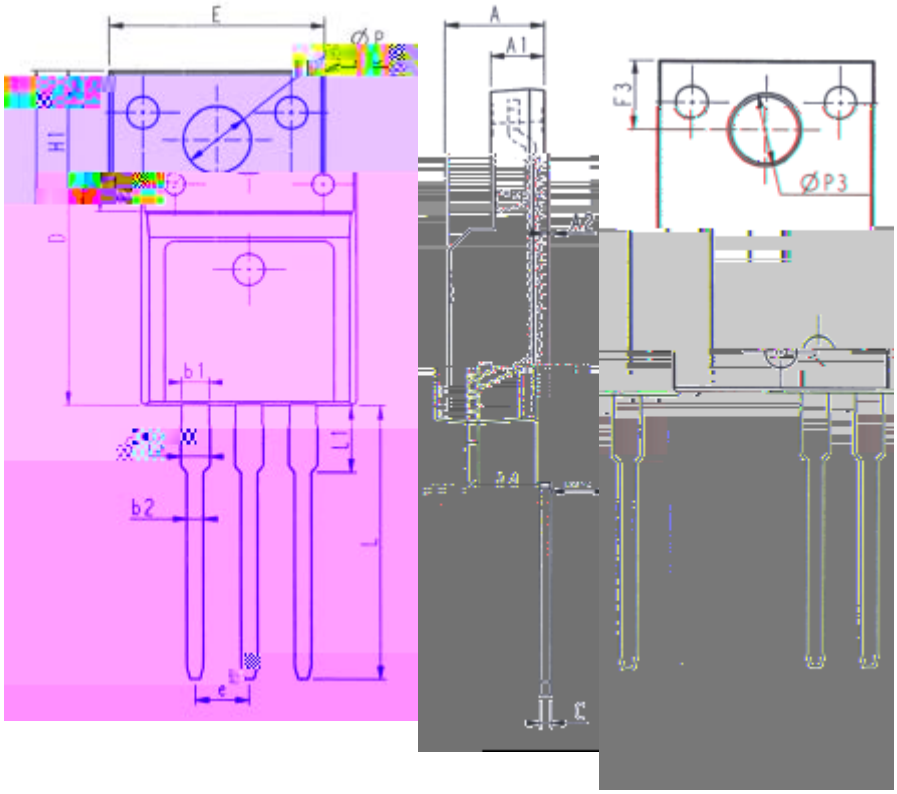


Fig 15. Peak Diode Recovery dv/dt Test Circuit & Waveforms



TO-220F



Unit: mm		
Symbol	Min.	Max.
E	9.96	10.36
A	4.50	4.90
A1	2.34	2.74
A2	[illegible]	[illegible]
A4	[illegible]	[illegible]
c	0.40	0.65
D	15.57	[illegible]
H1	[illegible]	[illegible]
e	2.54BSC	

Unit: mm		
Symbol	Min.	Max.
L	12.68	13.28
L1	2.93	3.13
P	3.03	3.38
P3	3.15	3.65
F3	3.15	3.45
G3	1.25	1.55
b1	1.18	1.43
b2	0.70	0.95