The GreenMOS® high voltage MOSFET utilizes charge balance technology to achieve outstanding low on-resistance and lower gate charge. It is engineered to minimize conduction loss, provide superior switching performance and robust avalanche capability.

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Parameter	Value	Unit
$V_{DS,\ min}$ @]TJETQ0. EMC /F		

Absolute Maximum Ratings at T_j=25 unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	650	V
Gate-source voltage	V_{GS}	±30	V
Continuous drain current[1], T_C=25 °C	I_D	8	A
Continuous drain current[1], T_C=100 °C		5.1	
Pulsed drain current[2], T_C=25 °C	$I_{D,\ pulse}$	24	A
Continuous diode forward current[1], T_C=25 °C	I_S	8	A
Diode pulsed current[2], T_C=25 °C	$I_{S,\ pulse}$	24	A
Power dissipation[3], T_C=25 °C	P_D	28	W
Single pulsed avalanche energy[5]	E_{AS}	117	mJ
MOSFET dv/dt ruggedness, V_{DS}	dv/dt	50	V/ns
Reverse diode dv/dt, V_{DS} SD D	dv/dt	50	V/ns
Maximum diode commutation speed di_f/dt, V_{DS} SD D	di_f/dt	500	A/

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		633		pF	V_{GS}=0 V, V_{DS}=100 V, 00 kHz
Output capacitance	C_{oss}		36.9		pF	
Reverse transfer capacitance	C_{rss}		2.4		pF	
Turn-on delay time	$t_{d(on)}$		38.6		ns	V_{GS}=10 V, V_{DS}=400 V, R_G I_D=4 A
Rise time	t_r		33.9		ns	
Turn-off delay time	$t_{d(off)}$		66.8		ns	
Fall time	t_f		14		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total gate charge	Q_g		11.9		nC	V_{GS}=10 V, V_{DS}=400 V, I_D=4 A
Gate-source charge	Q_{gs}		4.2		nC	
Gate-drain charge	Q_{gd}		4.5		nC	
Gate plateau voltage	$V_{plateau}$		6.9		V	

Body Diode Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Diode forward voltage	V_{SD}			1.4	V	I_S=8 A, V_{GS}=0 V
Reverse recovery time	t_{rr}		87		ns	V_R=400 V, I_S=4 A, di/dt
Reverse recovery charge	Q_{rr}		316.1		nC	
Peak reverse recovery current	I_{rrm}		6.9		A	

Note

1) Calculated continuous current based on maximum allowable junction temperature.
2) Repetitive rating; pulse width limited by max. junction temperature.
3) Pd is based on max. junction temperature, using junction-case thermal resistance.
4) The value of R is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_a=25 °C.
5) V_{DD}=100 V, V_{GS}=10 V, L=60 mH, starting T_j=25 °C.

Electrical Characteristics Diagrams

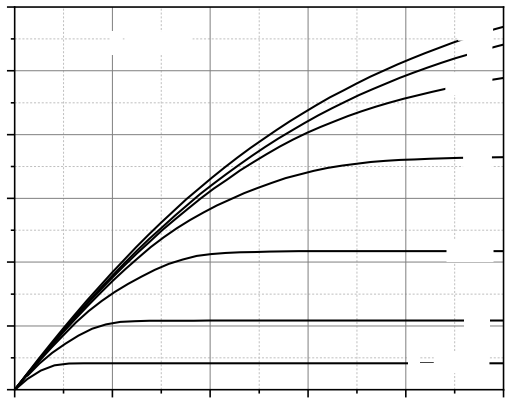

Figure 1. Typ. output characteristics

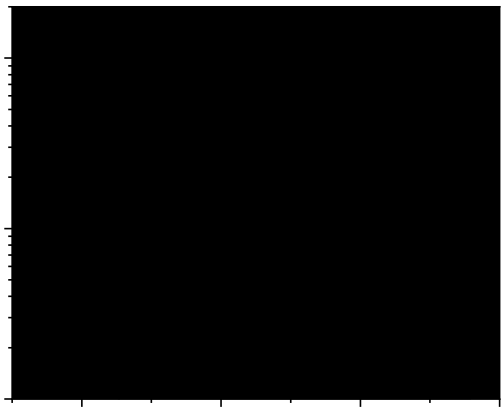

Figure 2. Typ. transfer characteristics

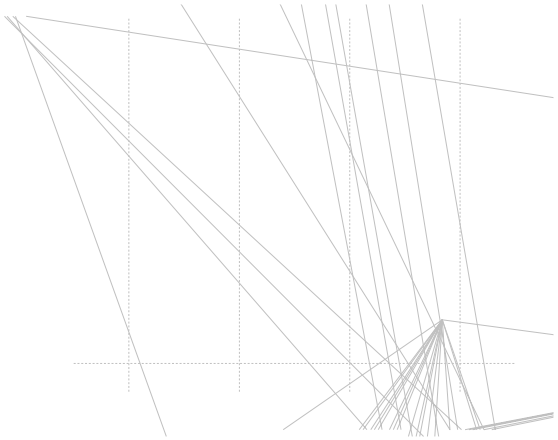

Figure 3. Typ. capacitances

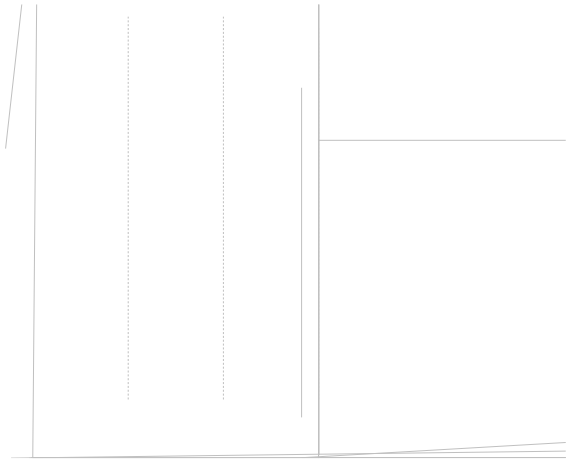

Figure 4. Typ. gate charge

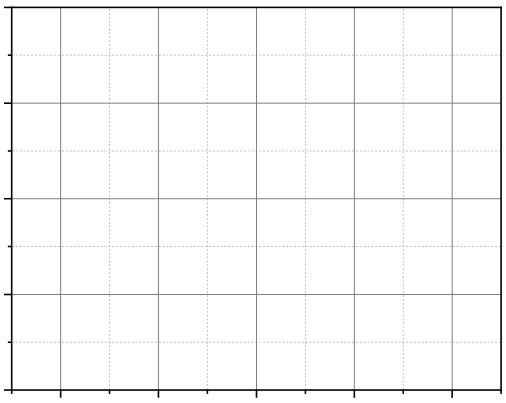

Figure 5. Drain-source breakdown voltage

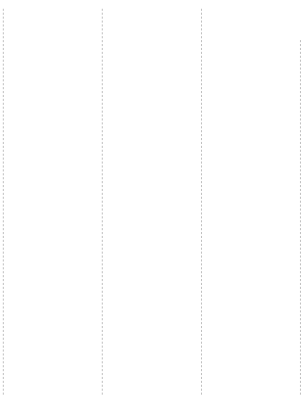

Figure 6. Drain-source on-state resistance

Test circuits and waveforms

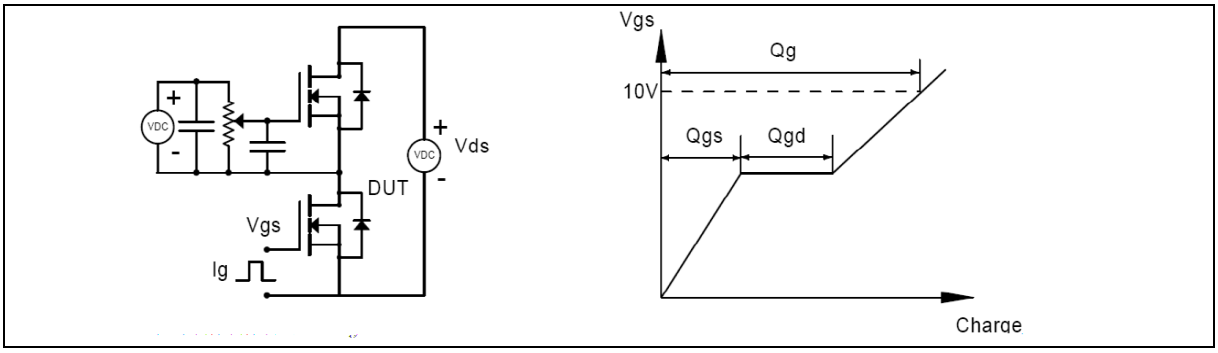

Figure 1. Gate charge test circuit & waveform

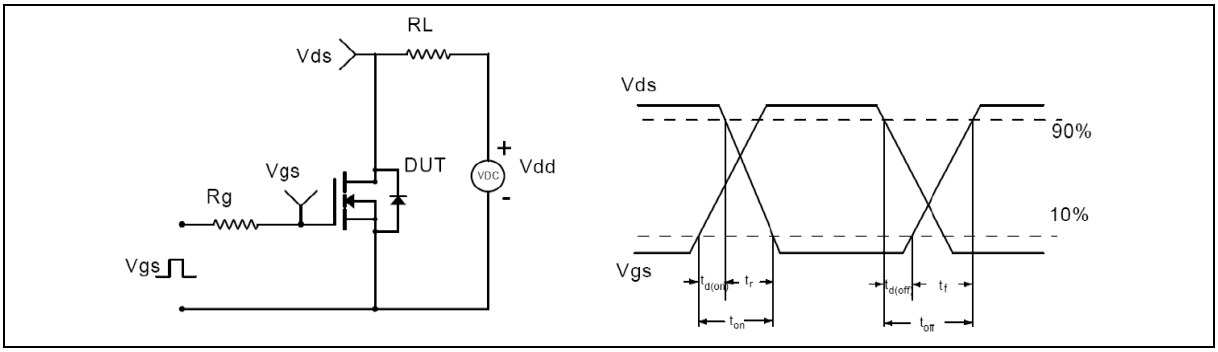

Figure 2. Switching time test circuit & waveforms

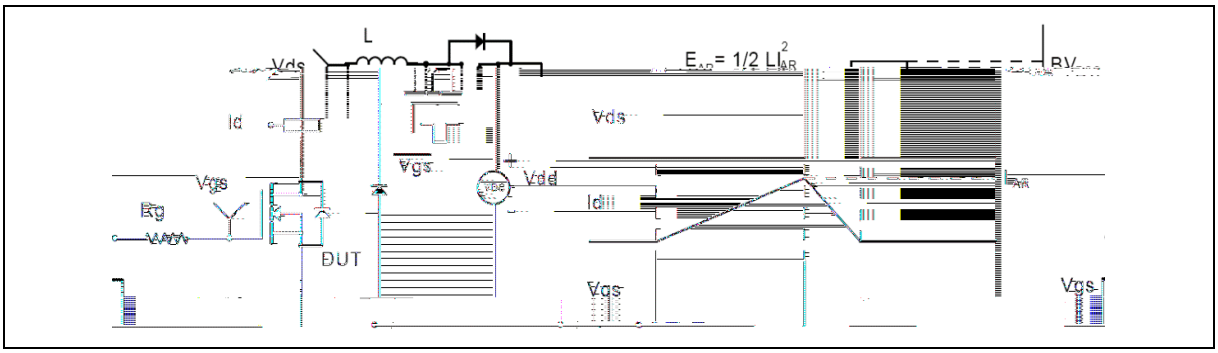

Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

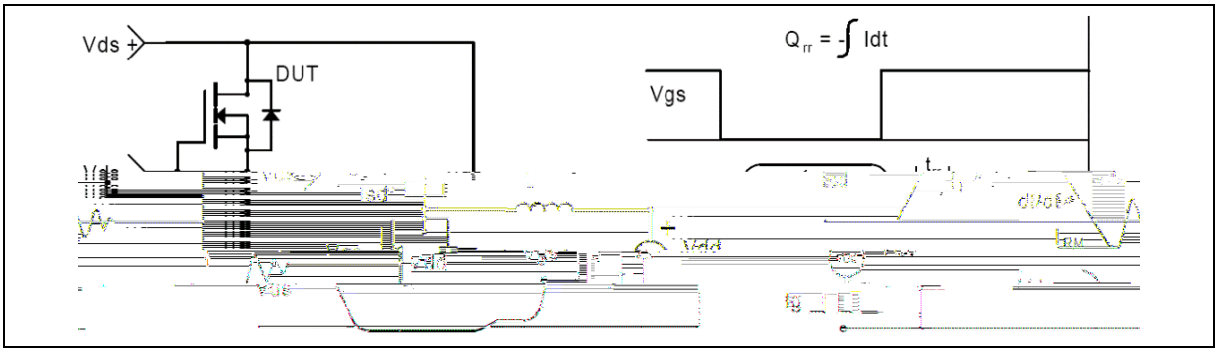

Figure 4. Diode reverse recovery test circuit & waveforms

Package Information

Symbol	mm		
	Min	Nom	Max
E	9.96	10.16	10.36
A	4.50	4.70	4.90
A1	2.34	2.54	2.74
A4	2.56	2.76	2.96
c	0.40	0.50	0.65
D	15.57	15.87	16.17
H1	6.70REF		
e	2.54BSC		
L	12.68	12.98	13.28
L1	2.88	3.03	3.18
	3.03	3.18	3.38

Ordering Information

Package Type	Units/ Tube	Tubes/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
TO220F-C	50	20	1000	6	6000

Product Information

Product	Package