

Electrical Characteristics (T_c=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250μA	100	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.9	1.3	1.6	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	14	17	mΩ
		V _{GS} =4.5V, I _D =20A	-	15	18	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =20A	32	-	-	S
Dynamic Characteristics (Note 4)						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, F=1.0MHz	-	4700	-	PF
Output Capacitance	C _{oss}		-	176	-	PF
Reverse Transfer Capacitance	C _{rss}		-	148	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =30V, R _L =1.5Ω, R _G =2.5Ω, V _{GS} =10V	-	15	-	nS
Turn-on Rise Time	t _r		-	11	-	nS
Turn-Off Delay Time	t _{d(off)}		-	52	-	nS
Turn-Off Fall Time	t _f		-	13	-	nS
Total Gate Charge	Q _g	I _D =20A, V _{DD} =50V, V _{GS} =10V	-	119	-	nC
Gate-Source Charge	Q _{gs}		-	11.4	-	nC
Gate-Drain Charge	Q _{gd}		-	22.9	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V, I _S =20A	-	0.85	1.2	V
Diode Forward Current (Note 2)	I _S		-	-	55	A
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = 20A di/dt = 100A/μs (Note 3)	-	33		nS
Reverse Recovery Charge	Q _{rr}		-	54		nC
Forward Turn-On Time	t _{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production
5. EAS condition: T_J=25°C, V_{DD}=50V, V_G=10V, L=0.5mH, R_G=25Ω

Typical Electrical and Thermal Characteristics (Curves

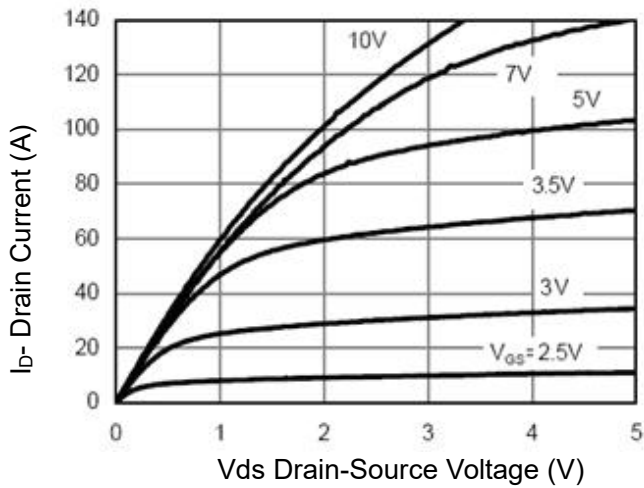


Figure 1 Output Characteristics

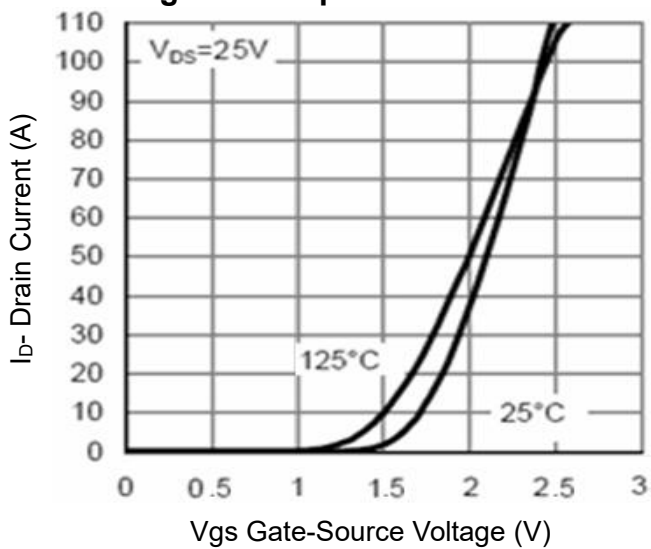


Figure 2 Transfer Characteristics

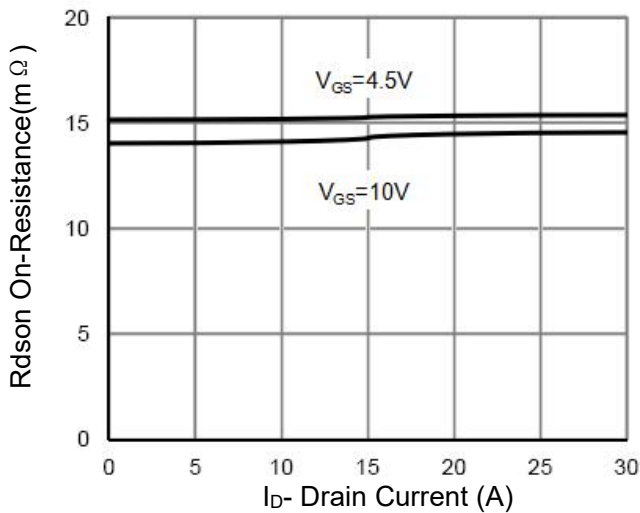


Figure 3 Rdson- Drain Current

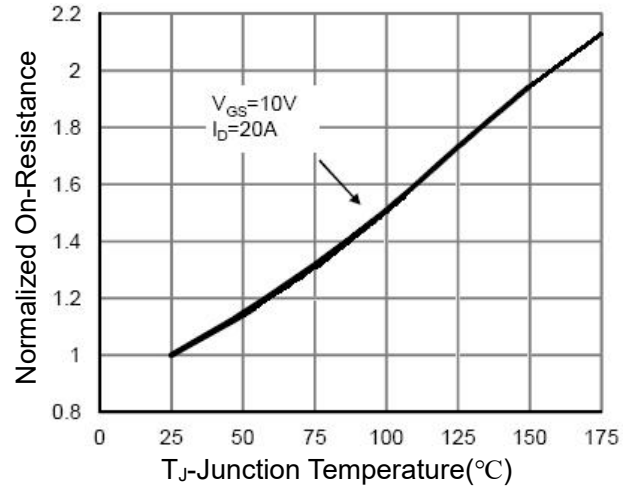


Figure 4 Rdson-Junction Temperature

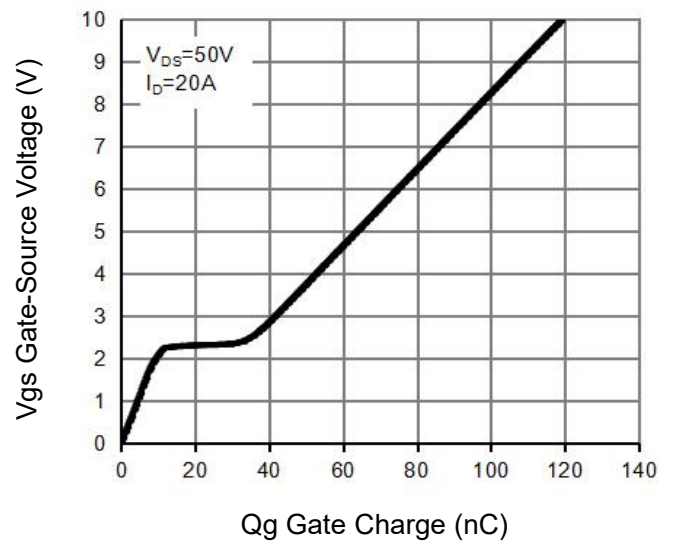


Figure 5 Gate Charge

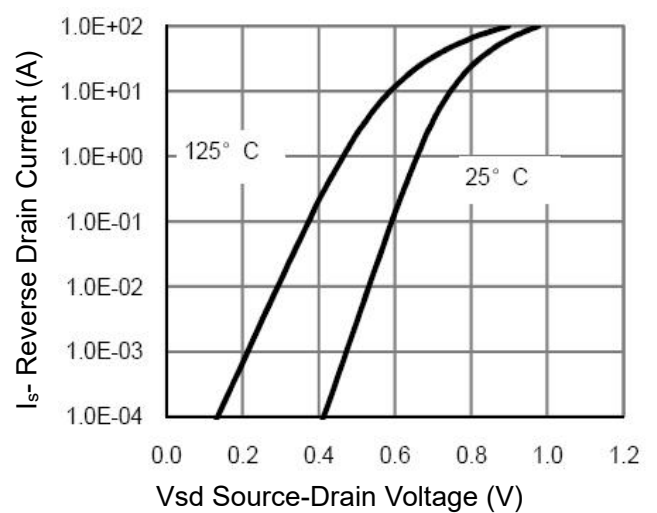


Figure 6 Source- Drain Diode Forward

TM55N10D

Channel Enhancement Mosfet

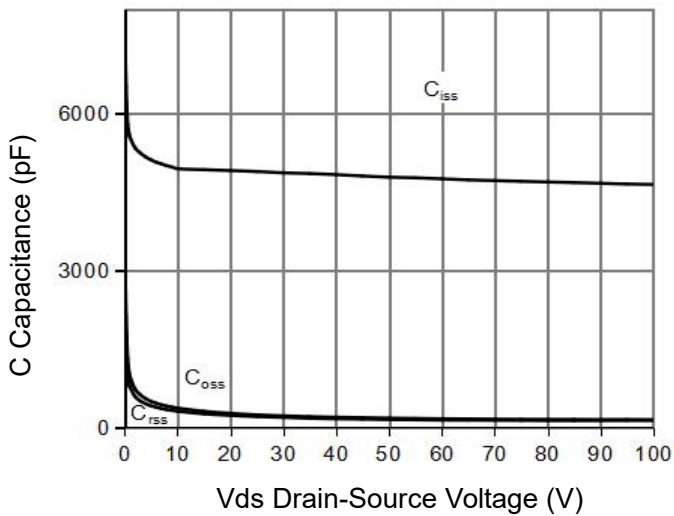


Figure 7 Capacitance vs Vds

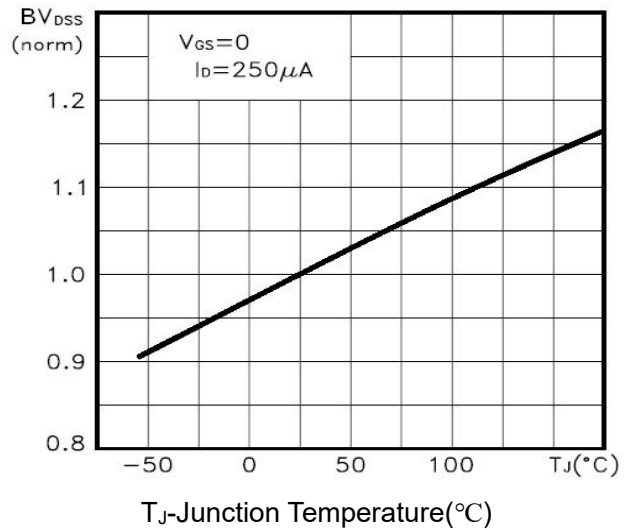


Figure 9 BV_{DSS} vs Junction Temperature

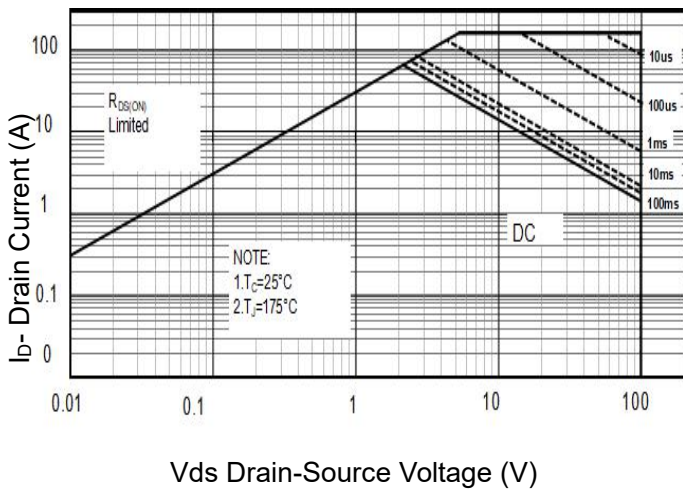


Figure 8 Safe Operation Area

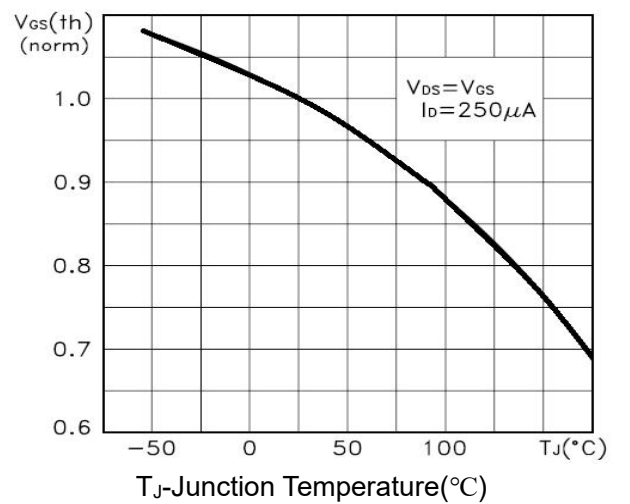


Figure 10 V_{GS(th)} vs Junction Temperature

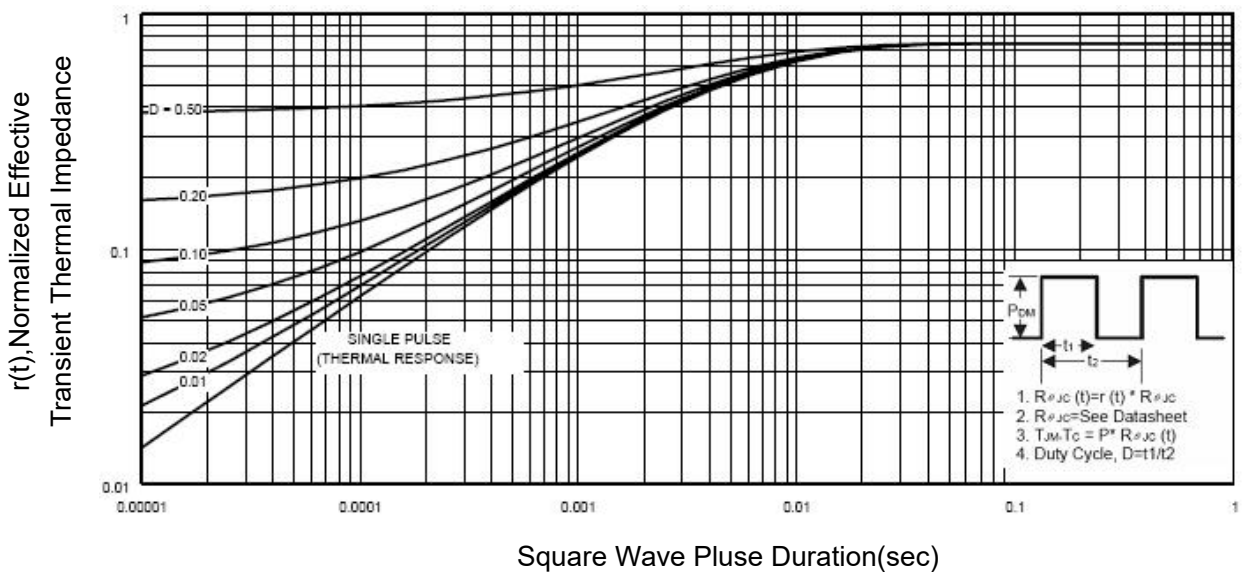
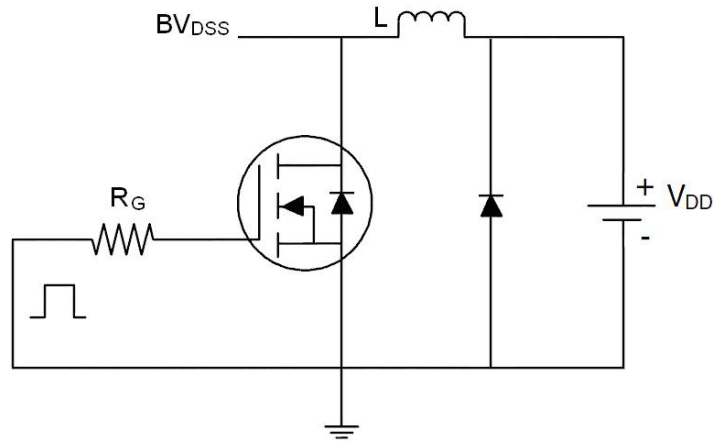


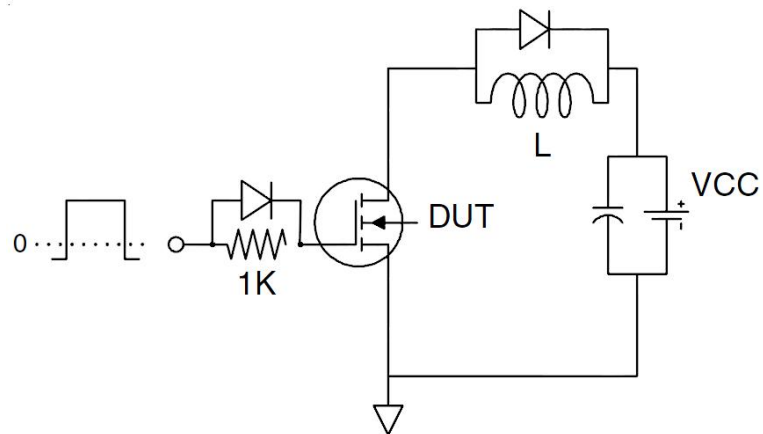
Figure 11 Normalized Maximum Transient Thermal Impedance

Test Circuit

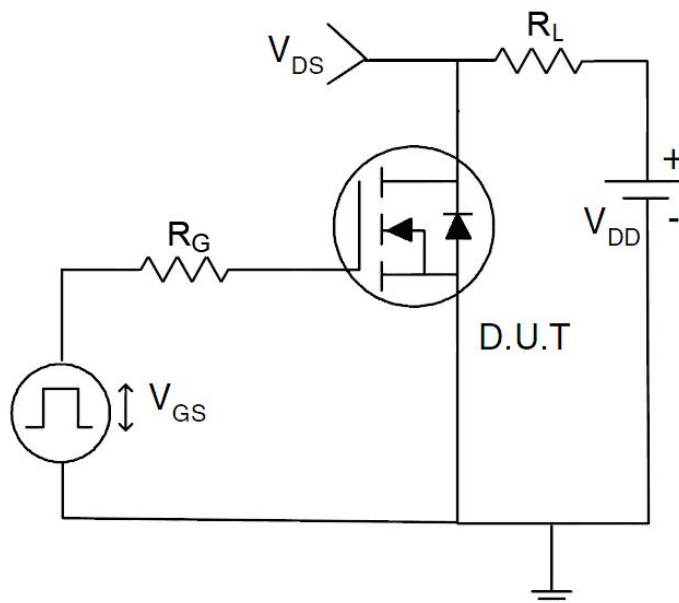
1) E_{AS} test Circuit



2) Gate charge test Circuit



3) Switch Time Test Circuit



3DFNDJH ,QIRUPDWLRQ 72 /

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