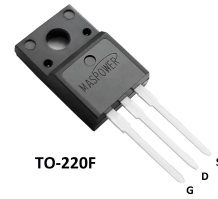


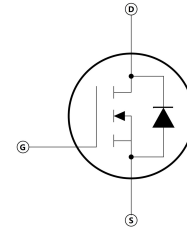
Features

- Ultra low $R_{DS(on)(typ.)}=0.16\Omega$
- Ultra low gate charge(typ. $Q_g=40nC$)
- 100% UIS tested
- RoHS compliant



Applications

- Power factor correction(PFC)
- Switched mode power supplies(SMPS)
- Uninterruptible power supply(UPS)



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

Parameter	Symbol		Value	Unit
Drain-Source Voltage	V _{DSS}		650	V
Drain Current -continuous	I _D	T _C =25℃	25	A
		T _C =100℃	13	A
Drain Current - pulse (note 1)	I _{DM}		60	A
Gate-Source Voltage (DC)	V _{GSS}		±20	V
Single Pulsed Avalanche Energy (note 2)	E _{AS}		600	mJ
Power Dissipation	P _D		34	W
Operating and Storage Temperature Range	T _J ,T _{STG}		-55~+150	℃
Solding temperature,wave soldering only allowed at leads.(1.6mm for 10s)	T _{sold}		260	℃

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

Parameter	Symbol	Tests conditions	Min	Typ	Max	Units
Off-Characteristics						
Drain-Source Voltage	BV_{DSS}	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	650	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=650\text{V}, V_{GS}=0\text{V}, T_C=25^\circ\text{C}$	-	-	1	μA
Gate-body leakage current,forward	I_{GSSF}	$V_{DS}=0\text{V}, V_{GS}=20\text{V}$	-	-	100	nA

Gate-body leakage current,reverse	I _{GSSR}	V _{DS} =0V,V _{GS} =20V		-	-	-100	nA
On-Characteristics							
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250uA		2.5	3.0	4.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =10A	T _J =25℃	-	0.16	0.18	Ω
			T _J =150℃	-	0.42	-	
Forward Transconductance	g _{fs}	V _{DS} =10V,I _D =10A (note 4)		-	2.2	-	S
Dynamic Characteristics							
Gate resistance	R _g	F=1.0MHz open drain		-	5.08	-	Ω
Input capacitance	C _{iss}	V _{DS} =100V, V _{GS} =0V, F=1.0MHz		-	1921	-	pF
Output capacitance	C _{oss}			-	65.1	-	pF
Reverse transfer capacitance	C _{rss}			-	1.2	-	pF
Switching Characteristics							
Turn-On delay time	t _{d(on)}	V _{DD} =400V,I _D =10A, R _G =10Ω(note 4,5)		-	67.0	-	ns
Turn-On rise time	t _r			-	12.1	-	ns
Turn-Off delay time	t _{d(off)}			-	71.6	-	ns
Turn-Off Fall time	t _f			-	7.9	-	ns
Total Gate Charge	Q _g	V _{DS} =520V,I _D =10A, V _{GS} =0 to 10V (note4,5)		-	40	-	nC
Gate-Source charge	Q _{gs}			-	8.8	-	nC
Gate-Drain charge	Q _{gd}			-	14.4	-	nC
Gate-plateau voltage	V _p			-	4.7	-	V
Drain-Source Diode Characteristics and Maximum Ratings							
Maximum Continuous Drain -Source Diode Forward Current	I _S			-	-	20	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}			-	-	60	A
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V,I _S =10A		-	-	1.1	V
Reverse recovery time	t _{rr}	V _{GS} =0V,I _S =10A dI _F /dt=100A/us (note 4) V _R =400V		-	252.3	-	ns
Reverse recovery charge	Q _{rr}			-	2561.5	-	uC
Peak reverse recovery current	I _{RRM}			-	21.3	-	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	$R_{th(J-C)}$	3.7	$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient,minimal Footprint ⁴	$R_{th(J-A)}$	62	

Notes:

1:Pulse width limited by maximum junction temperature

2:L=48mH,I_{AS}=5A,V_{DD}=60V,Starting T_J=25 $^{\circ}\text{C}$

3:I_{SD}≤10A,di/dt≤200A/us,V_{DD}≤BV_{DSS},Starting T_J=25 $^{\circ}\text{C}$

4:Pulse Test:Pulse Width≤200us,Duty Cycle≤2%

5:Essentially independent of operating temperature

Electrical Characteristics Diagrams

Figure 1. Typ. Output Characteristics

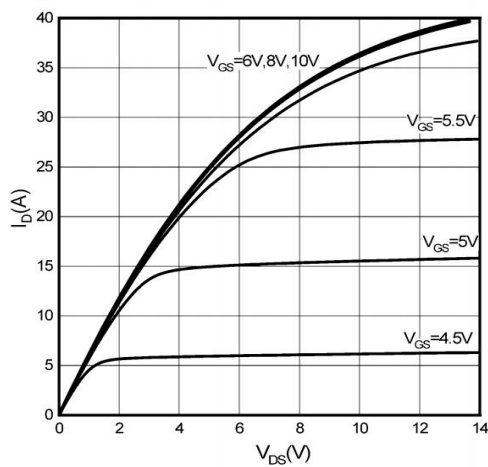


Figure 2. Transfer Characteristics

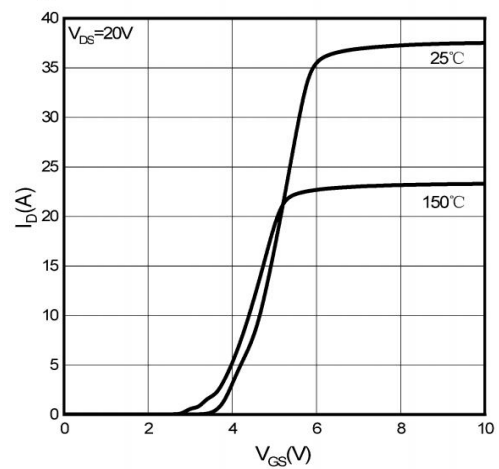


Figure 3. On-Resistance vs. Drain Current

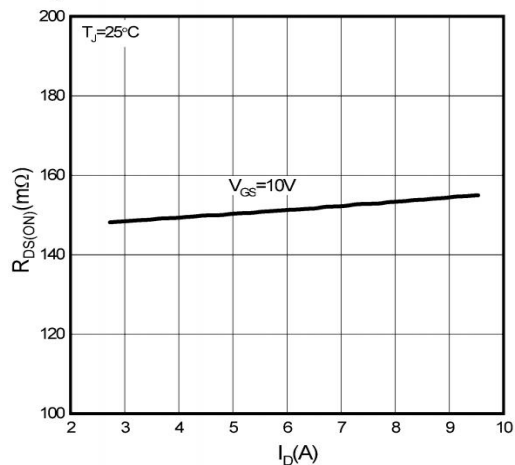


Figure 4. On-Resistance vs. Temperature

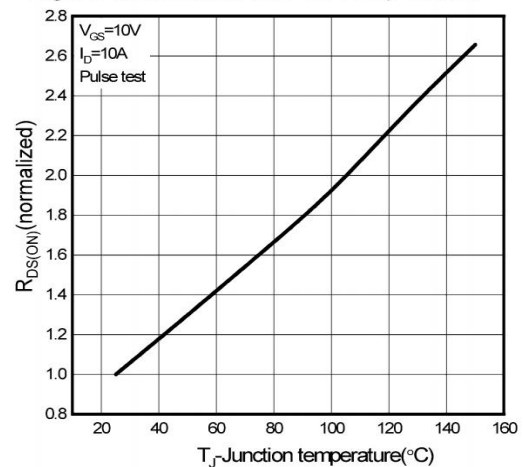


Figure 5. Breakdown Voltage vs. Temperature

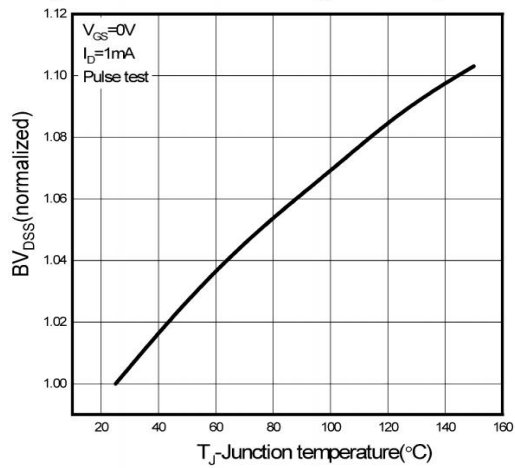


Figure 6. Threshold Voltage vs. Temperature

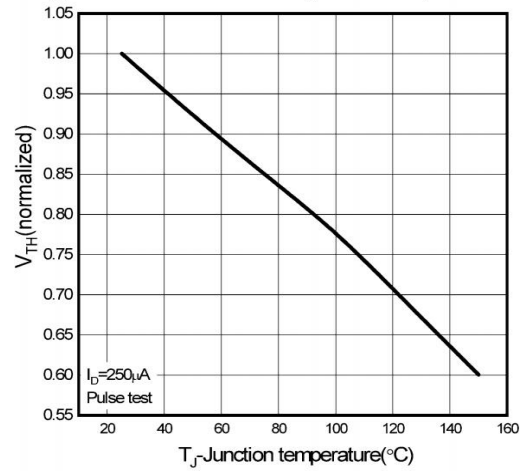


Figure 7. Body-Diode Characteristics

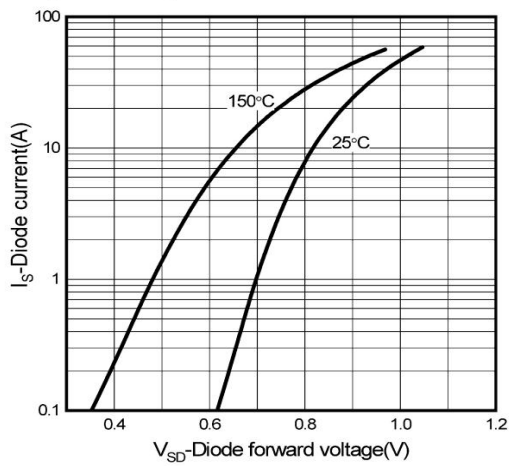


Figure 8. Capacitance Characteristics

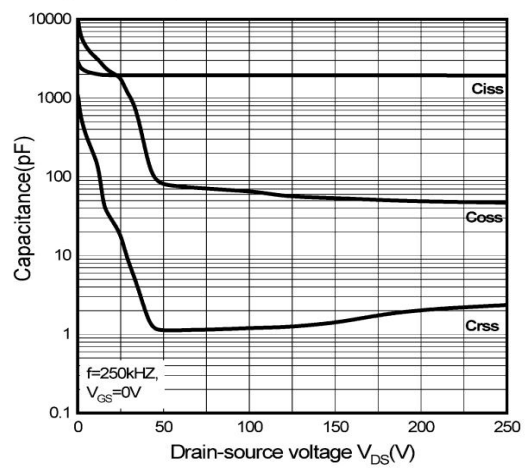


Figure 9. Gate Charge Characteristics

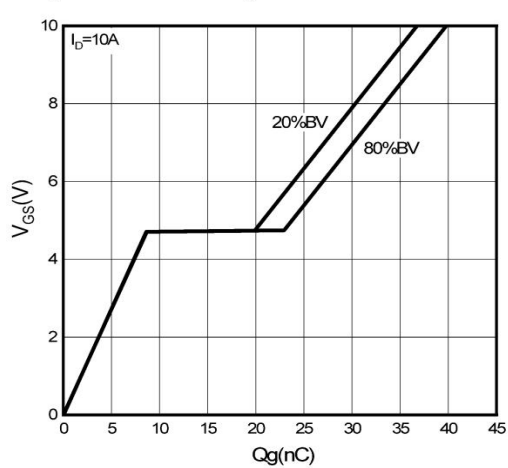


Figure 10. Drain Current Derating

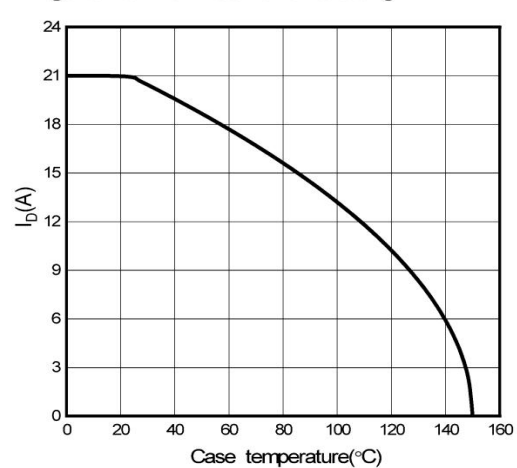


Figure 11. Power Dissipation vs. Temperature

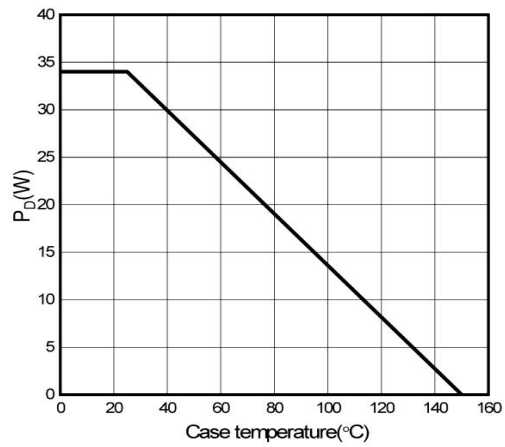


Figure 12. Safe Operating Area

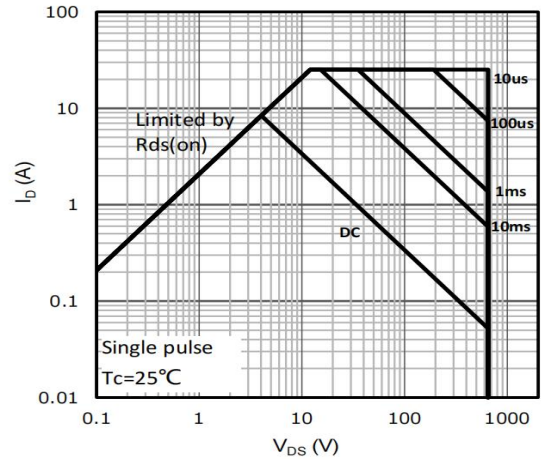
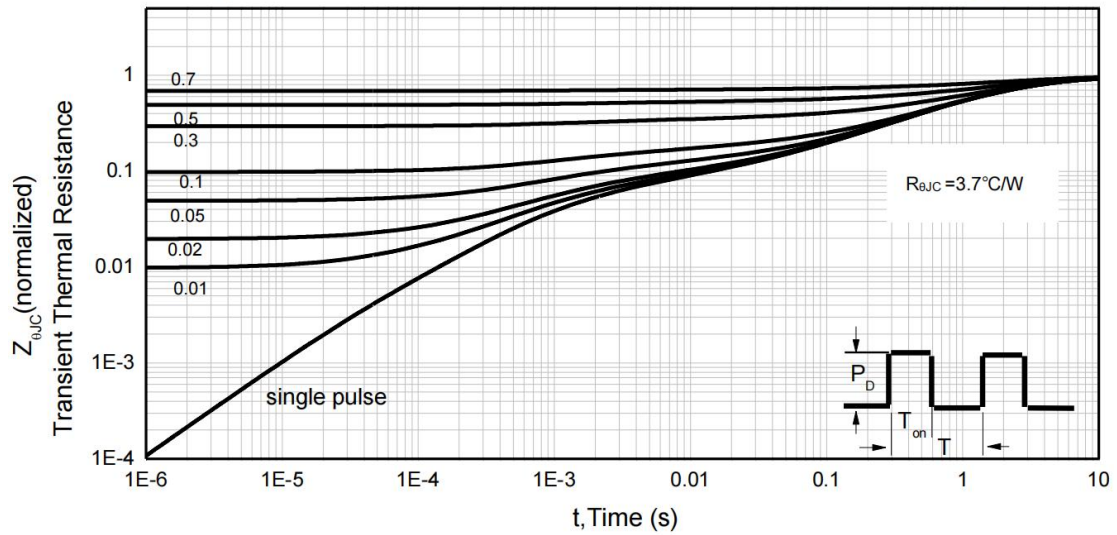
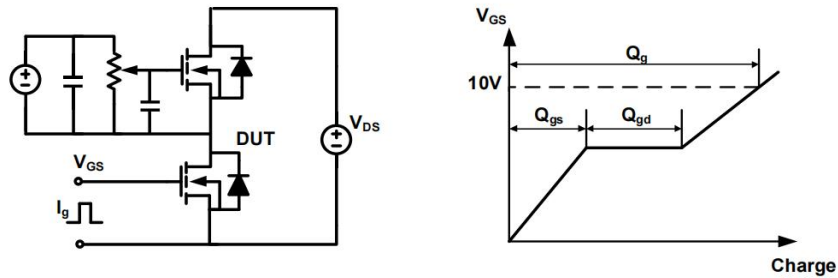


Figure 13. Normalized Maximum Transient Thermal Impedance (R_{thJC})

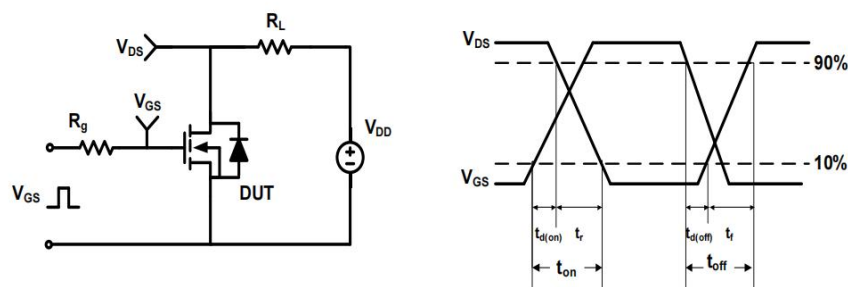


Test Circuit & Waveforms

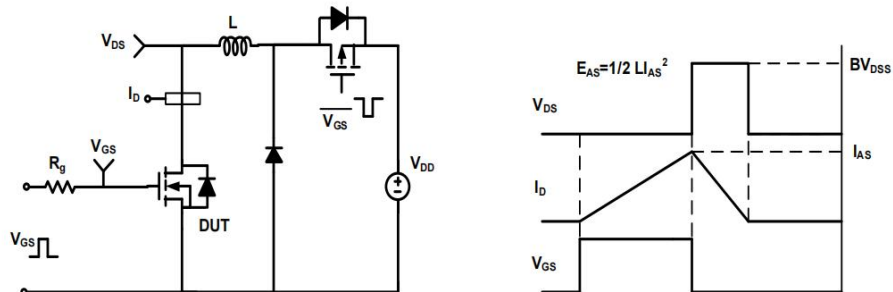
Gate Charge Test Circuit & Waveform



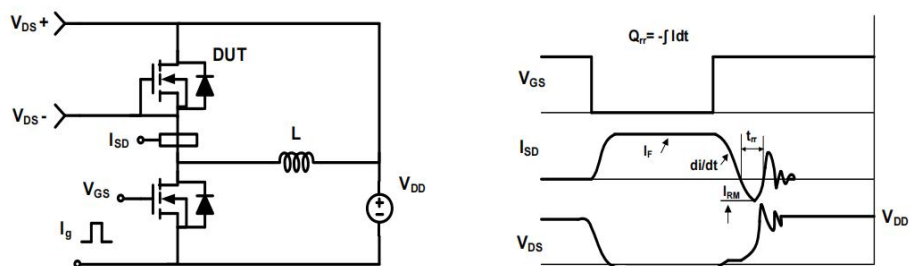
Resistive Switching Test Circuit & Waveform



Unclamped Inductive Switching (UIS) Test Circuit & Waveform



Diode Recovery Test Circuit & Waveform



Package Mechanical DATA

