

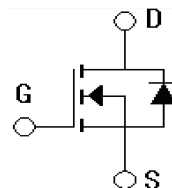
Features

- Low gate charge
- Low C_{rss} (typical 10pF)
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS product



Applications

- Switched mode power supplies
- Electronic ballasts



Absolute Ratings (Tc=25°C)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	800	V
Transient Gate-Source Voltage	V_{GSM}	± 30	V
Continuous Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current -continuous	$I_D@T=25^\circ C$	7	A
	$T=100^\circ C$	4.5	
Drain Current - pulse(note1)	I_{DM}	28	A
Single Pulsed Avalanche Energy (note2)	E_{AS}	490	mJ
Power Dissipation	PD	45.8	W
Operating and Storage Temperature Range	T_j, T_{STG}	-55~+150	°C
Peak Diode Recovery dv/dt (note3)	dv/dt	4.0	V/ns
Maximum Lead Temperature for Soldering Purposes	T_L	300	°C

Electrical Characteristics(T_{CASE}=25°C unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Type	Max	Units
Off-Characteristics						
Drain-Source Voltage	BV_{DSS}	$I_D=250\mu A, V_{GS}=0V$	800	-	-	V
Drain cut-off current	I_{DSS}	$V_{DS}=800V, V_{GS}=0V$	-	-	5	μA
Gate-body leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA

On-Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	2	-	4	V
Static Drain-Source On-Resistance (note4)	R _{DS(ON)}	V _{GS} =10V, I _D =1A@25℃	0.5	1.9	2.6	Ω
		V _{GS} =10V, I _D =1A@100℃	0.6	3.3	4.5	
		V _{GS} =10V, I _D =1A@150℃	0.8	4.9	6.5	
Forward Transconductance	G _{fs}	V _{DS} =50V, I _D =1A (note4)	-	3.8	-	S
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHZ	-	530	-	pF
Output capacitance	C _{oss}		-	50	-	pF
Reverse transfer capacitance	C _{rss}		-	10	-	pF
Gate Resistance	R _G	f=1.0MHZ	0.5	-	6.0	Ω
Switching Characteristics						
Turn-On delay time	t _{d(on)}	V _{DD} =400V, I _D =7A., R _G =25Ω	-	12.5		ns
Turn-On rise time	t _r		-	20		ns
Turn-Off delay time	T _{d(off)}		-	60.5		ns
Turn-Off Fall time	t _f		-	18.5		ns
Total Gate Charge	Q _g	V _{DS} =640V, I _D =7A, V _{GS} =10V(note 5)	-	14		nC
Gate-Source charge	Q _{gs}		-	4		nC
Gate-Drain charge	Q _{gd}		-	4.6		nC
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =7A(note 4)	-	-	1.5	V
Continuous Source -Drain Current	I _S		-	-	28	A
Reverse recovery time	trr	V _{GS} =0V, I _F =7A -dI _F /dt=100A/us (note4)	-	580	1500	ns
Reverse recovery charge	Q _{rr}		-	3.8	9.0	μC

Thermal Characteristics

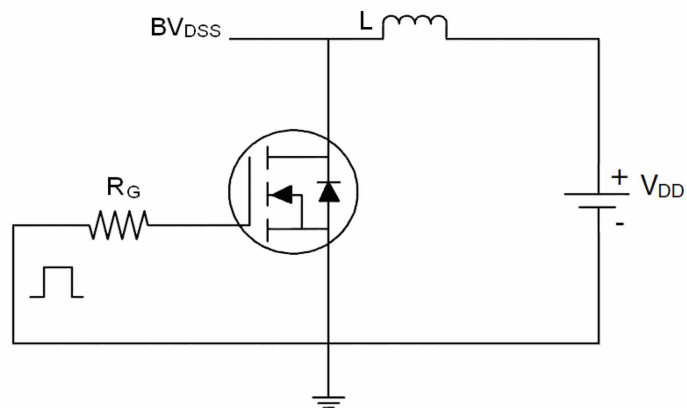
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case,Max	$R_{\theta JC}$	2.73	$^{\circ}C/W$
Thermal Resistance, Junction-to-Ambient,Max	$R_{\theta JA}$	110	

Notes:

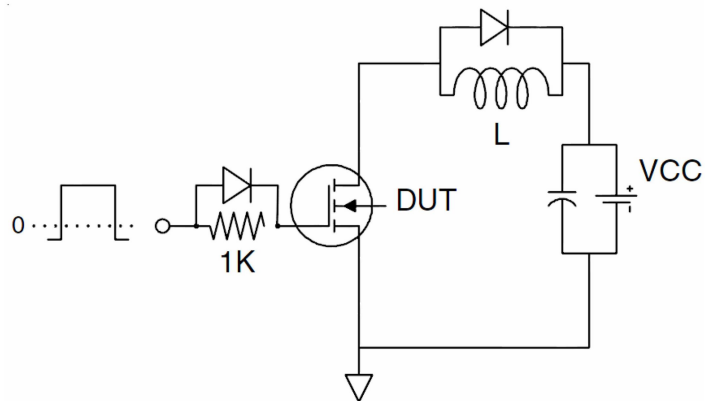
1. Pulse width limited by maximum junction temperature
2. $L=20mH, I_{AS}=7A, V_{DD}=50V, R_G=25\Omega$, Starting $T_J=25^{\circ}C$
3. $I_{SD} \leq 7A, di/dt \leq 200A/\mu s, V_{DD} \leq BVDSS$, Starting $T_J=25^{\circ}C$
4. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
5. Essentially independent of operating temperature

Test Circuit

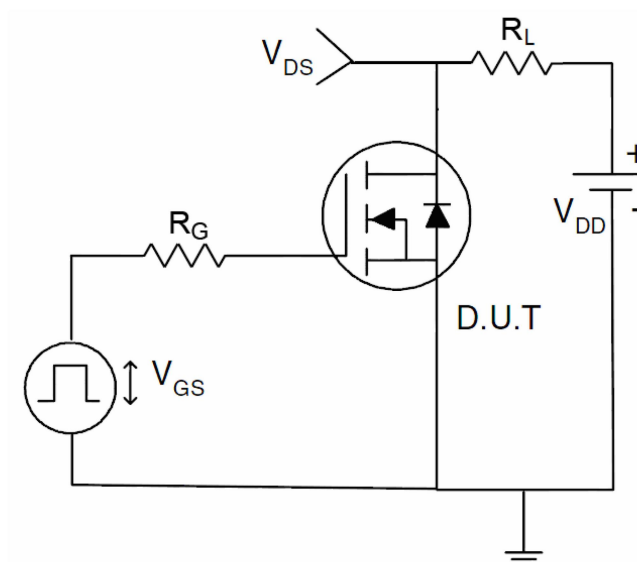
1) E_{AS} test Circuit



2) Gate charge test Circuit

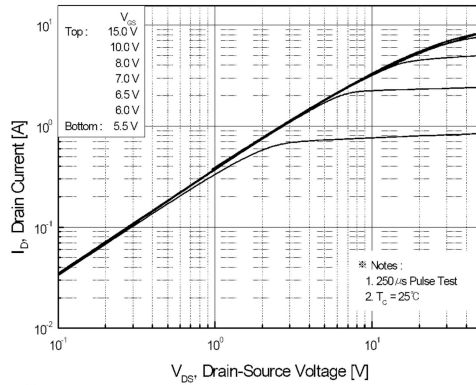


3) Switch Time Test Circuit

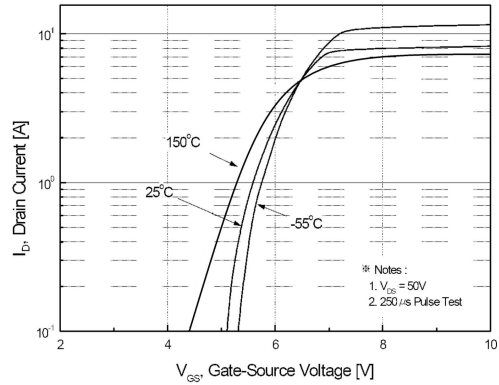


Electrical Characteristics (Curves)

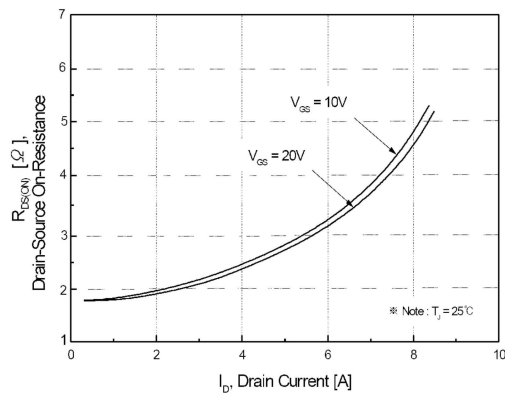
On-Region Characteristics



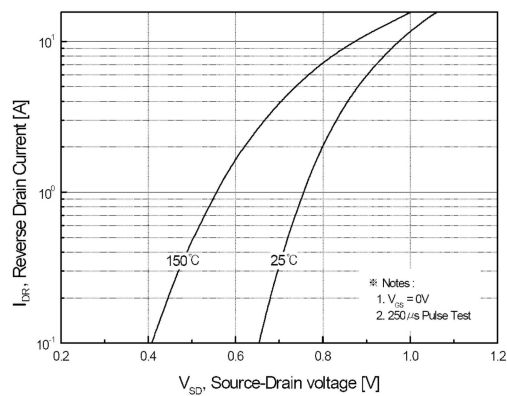
Transfer Characteristics



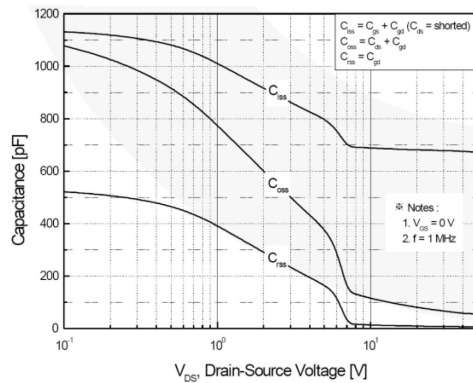
On-Resistance Variation vs. Drain Current and Gate Voltage



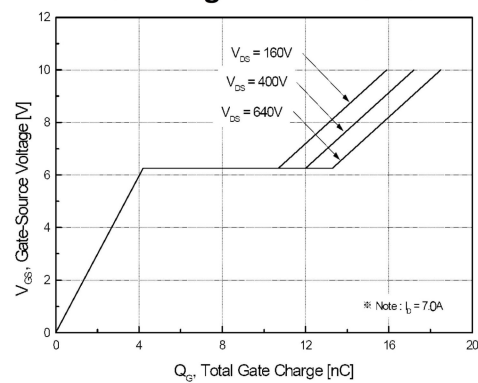
Body Diode Forward Voltage Variation vs. Source Current and Temperature



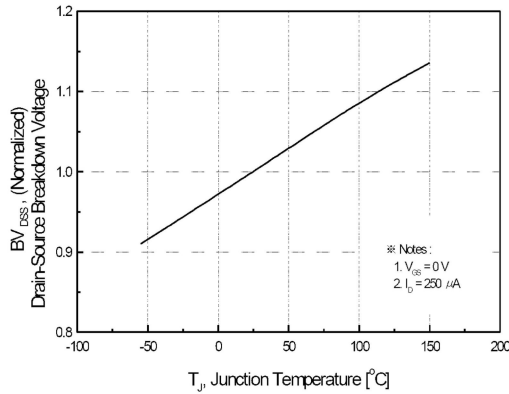
Capacitance Characteristics



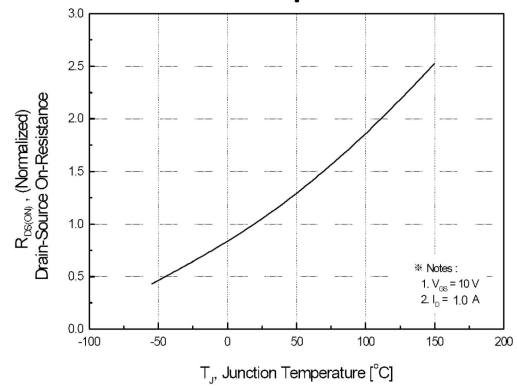
Gate Charge Characteristics



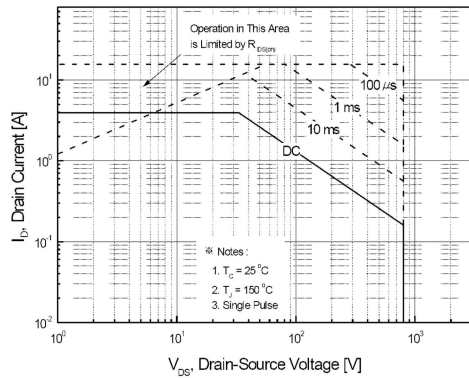
Breakdown Voltage Variation vs. Temperature



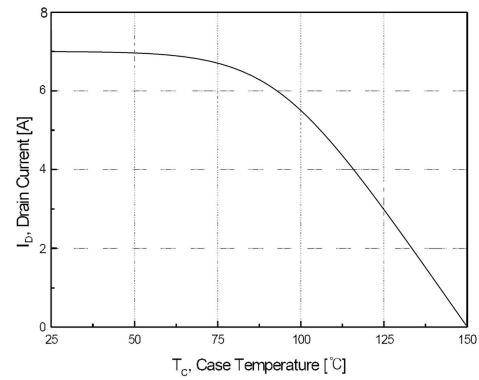
On-Resistance Variation vs. Temperature



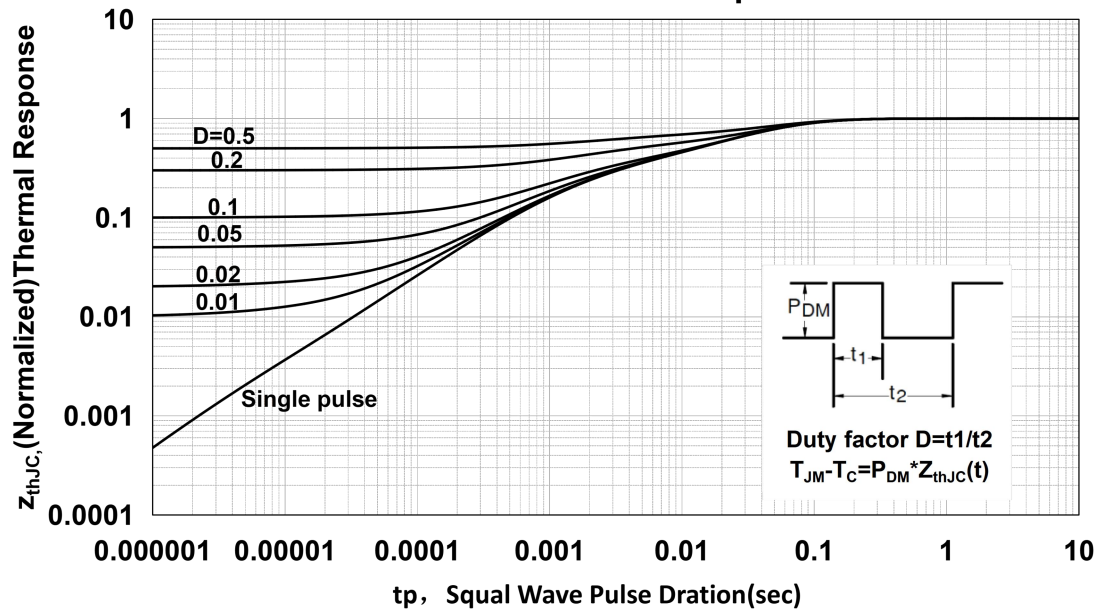
Maximum Safe Operating Area



Maximum Drain Current vs. Case Temperature



Normalized Transient Thermal Response Curve



Package Mechanical DATA

