

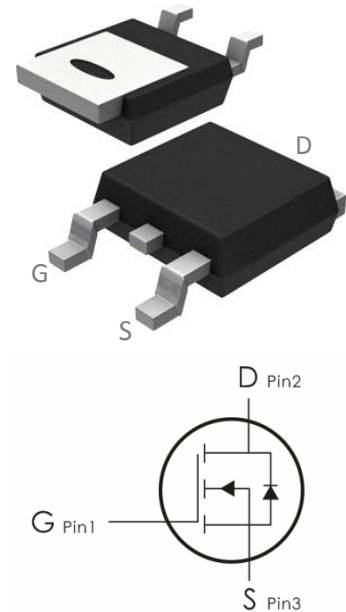
Description:

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=650V, I_D=5A, R_{DS(on)} < 0.9 \Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra $R_{DS(on)}$.
- 5) Excellent package for good heat dissipation.



Absolute Maximum Ratings: ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	650	V
V_{GS}	Gate-Source Voltage	± 30	V
I_D	Continuous Drain Current- $T_C=25^\circ\text{C}$	5	A
	Continuous Drain Current- $T_C=100^\circ\text{C}$	3	
	Pulsed Drain Current ¹	15	
dv/dt	Drain Source voltage slope, $V_{DS} = 480 \text{ V}$, $I_D = 5 \text{ A}$, $T_J = 125^\circ\text{C}$	48	V/ns
E_{AS}	Single Pulse Avalanche Energy ²	135	mJ
I_{AR}	Avalanche current ^(Note 1)	2.5	mj
P_D	Maximum PoPower Dissipation, $T_C=25^\circ\text{C}$	49	W
	Derate above 25°C	0.39	W $^\circ\text{C}$
E_{AR}	Repetitive Avalanche energy , t_{AR} limited by T_{Jmax} (Note 1)	0.4	MJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case ¹	2.55	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ¹	75	

Electrical Characteristics: ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourtce Breakdown Voltage	V _{GS} =0V,I _D =250 μ A	650	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =650V	---	---	1	μ A
					50	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 30V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	2.5	3	3.5	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =10V,I _D =2.5A	---	780	900	m Ω
G _{FS}	Forward Transconductance	V _{DS} =20V, I _D =3A	---	4.8		S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz	---	460		pF
C _{oss}	Output Capacitance		---	45		
C _{rss}	Reverse Transfer Capacitance		---	3.5		
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =380V, I _D =3A, V _{GS} =10V,R _{GEN} =18Ω	---	6		ns
t _r	Rise Time		---	3		ns
t _{d(off)}	Turn-Off Delay Time		---	50	60	ns
t _f	Fall Time		---	9	15	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =480V,	---	10	20	nC

Q_{gs}	Gate-Source Charge	$I_D=5A$	---	1.6		nC
Q_{gd}	Gate-Drain "Miller" Charge		---	4		nC
R_G	Intrinsic gate resistance	$f = 1 \text{ MHz open drain}$	---	2.5		Ω

Drain-Source Diode Characteristics

V_{SD}	Source-Drain Diode Forward Voltage	V _{GS} =0V,I _S =1A	---	---	1	V
I_{SDM}	Continuous Source Current			---	15	A
I_{SD}	Pulsed Source Current			---	5	A
t_{rr}	Reverse Recovery Time			14	---	Ns
q_{rr}	Reverse Recovery Charge			5	---	nc
I_{MM}						15

Notes:

- 1.Repetitive Rating: Pulse width limited by maximum junction temperature
2. $T_j=25^\circ\text{C}$, $V_{DD}=50V$, $V_G=10V$, $R_G=25\Omega$

Typical Characteristics: ($T_c=25^\circ\text{C}$ unless otherwise noted)

Figure1. Safe operating area

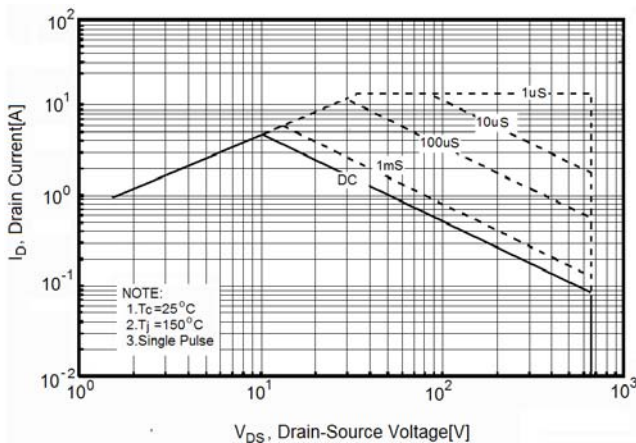


Figure2. Source-Drain Diode Forward Voltage

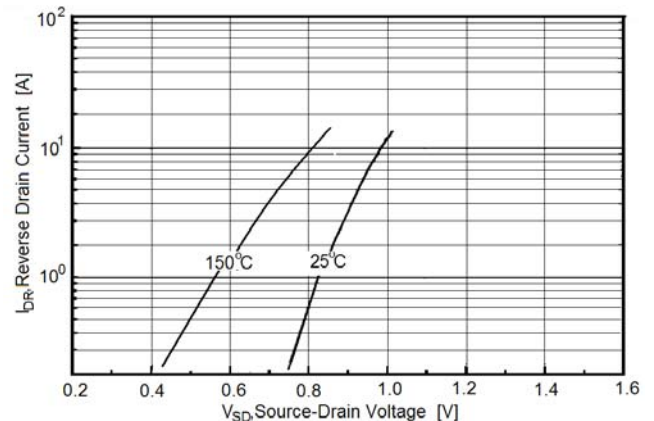


Figure3. Output characteristics

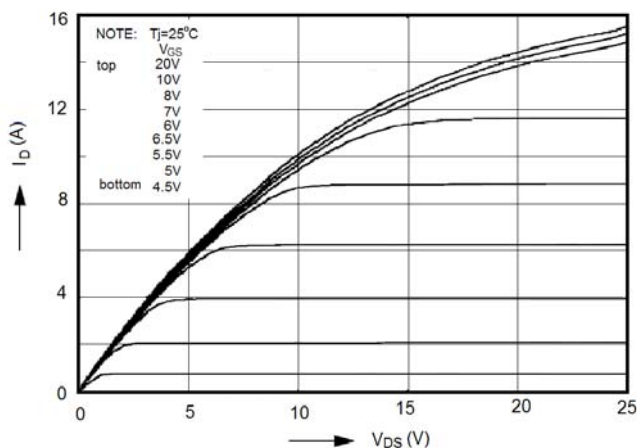


Figure4. Transfer characteristics

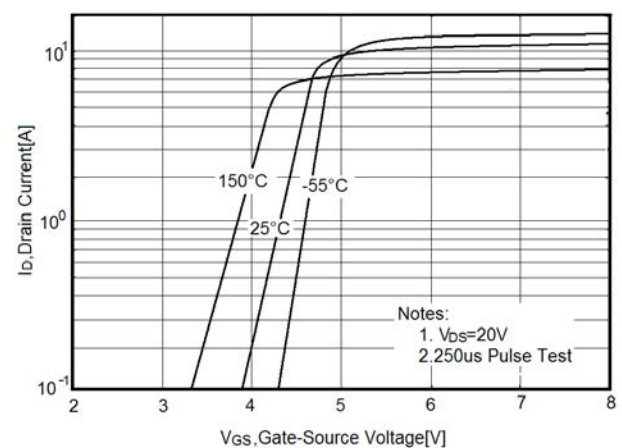


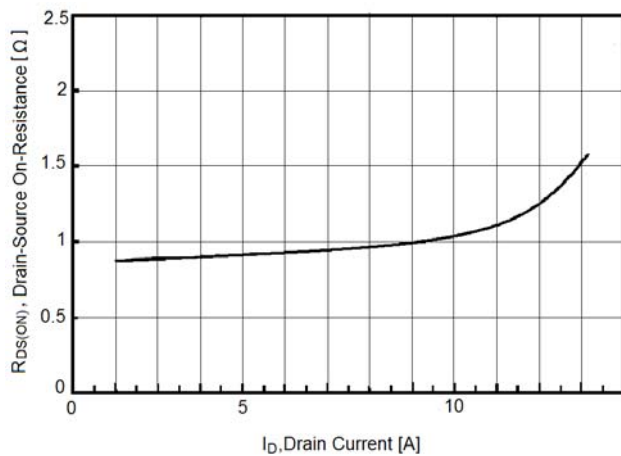
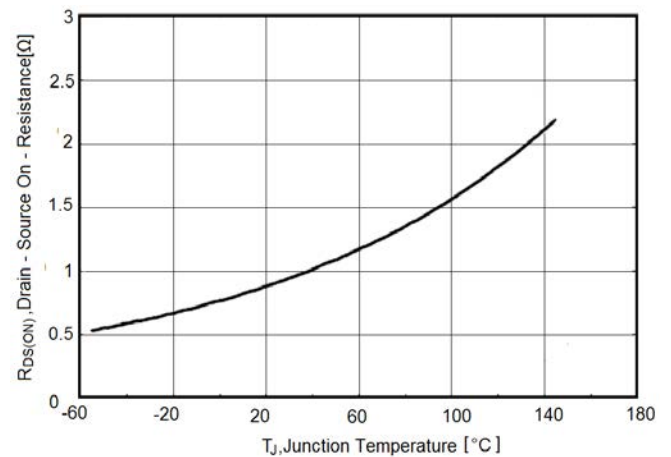
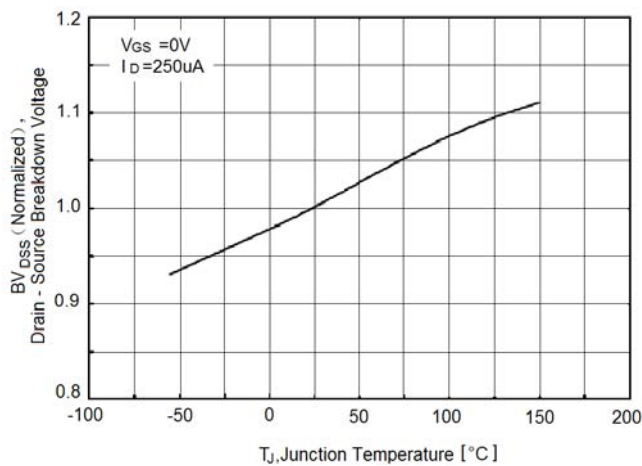
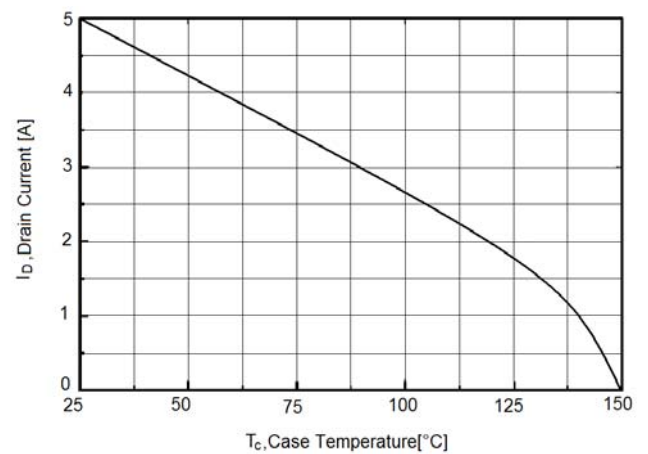
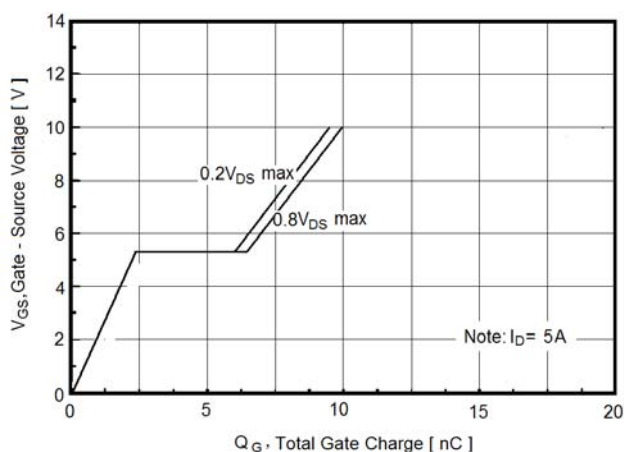
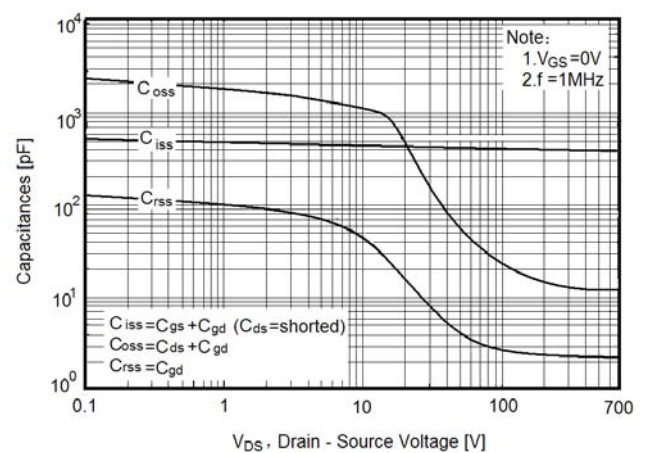
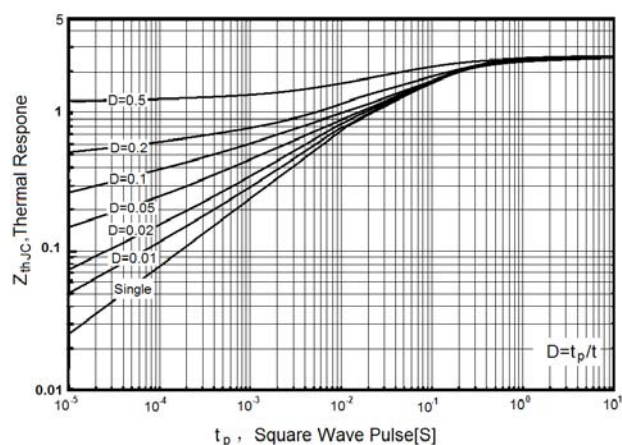
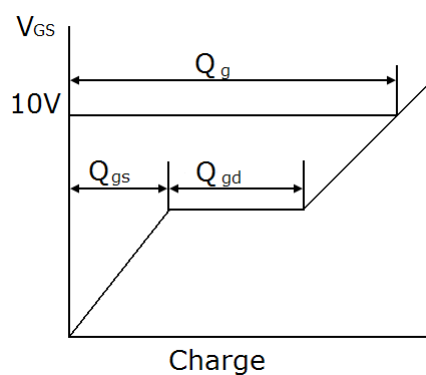
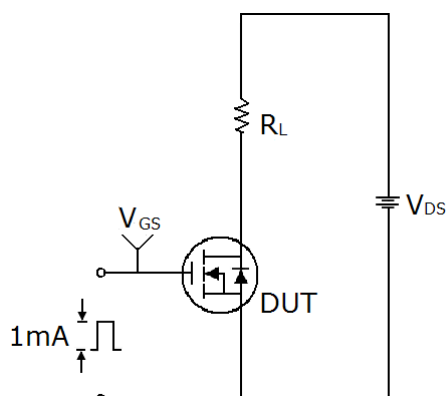
Figure5. Static drain-source on resistance

Figure6. $R_{DS(ON)}$ vs Junction Temperature

Figure7. BV_{DSS} vs Junction Temperature

Figure8. Maximum I_D vs Junction Temperature

Figure9. Gate charge waveforms

Figure10. Capacitance


Figure11. Transient Thermal Impedance

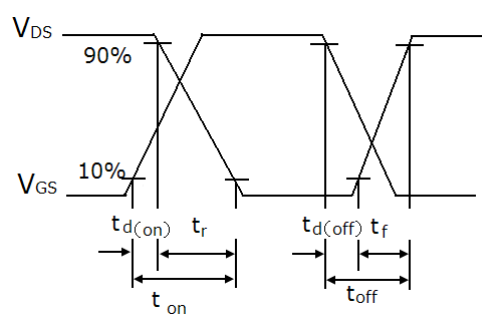
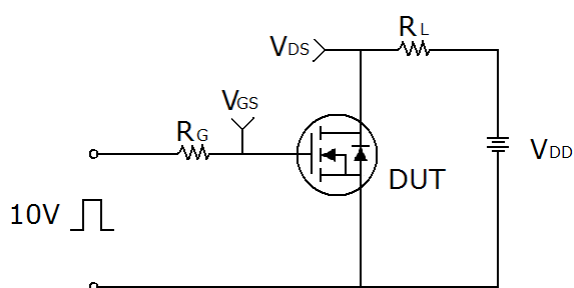


Test circuit

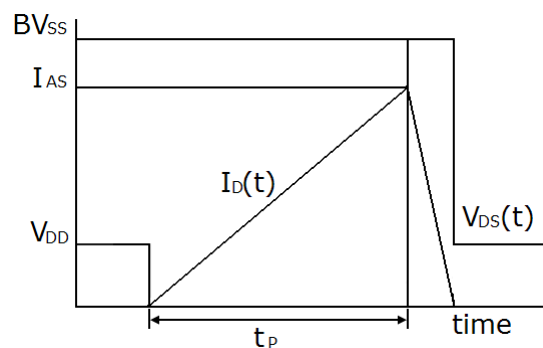
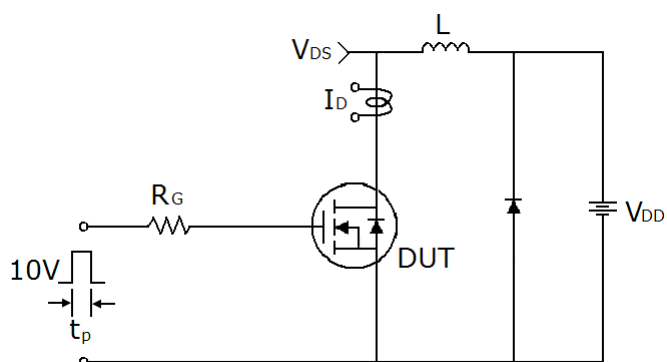
1) Gate charge test circuit & Waveform

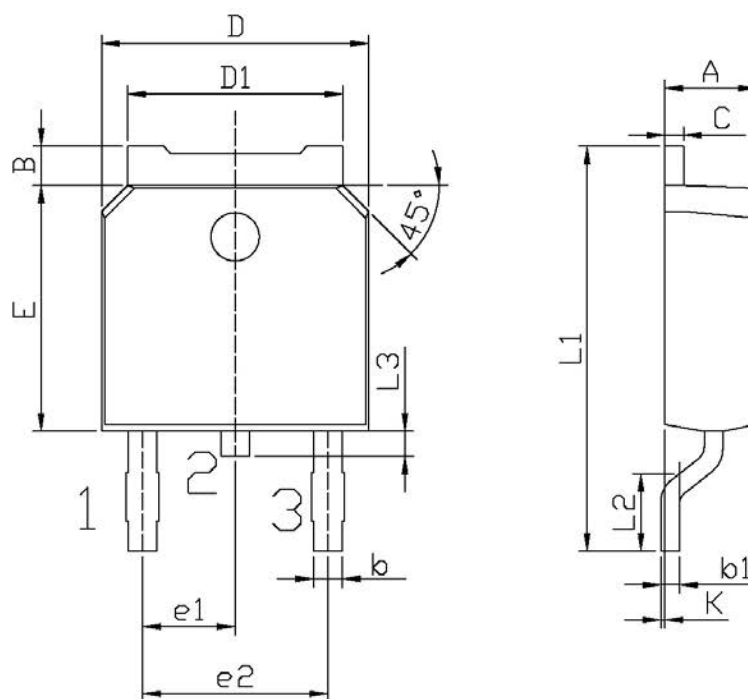


2) Switch Time Test Circuit:



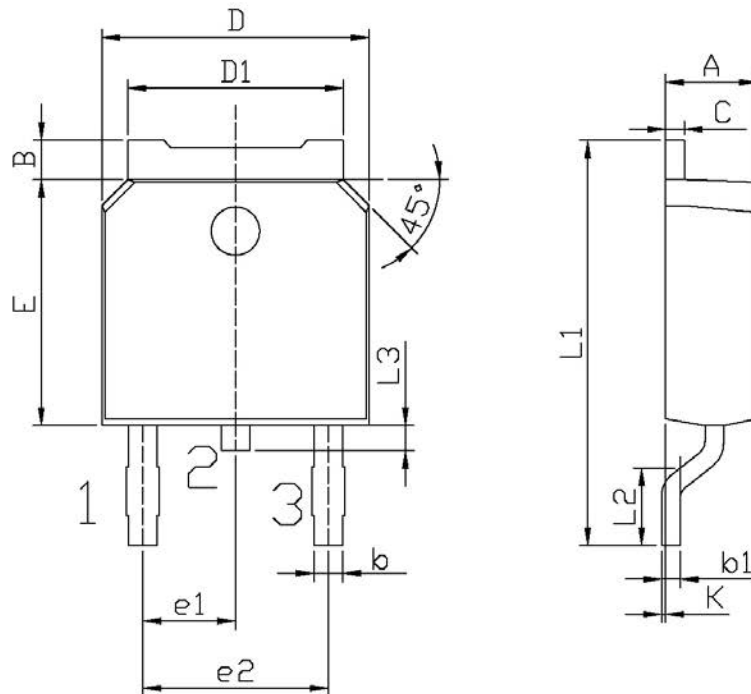
3) Unclamped Inductive Switching Test Circuit & Waveforms





单位: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.70	0.90	e2	4.43	4.73
b1	0.45	0.55	L1	9.85	10.35
C	0.45	0.55	L2	1.25	1.75
D	6.45	6.75	L3	0.60	0.90
D1	5.20	5.40	K	0.00	0.10



单位: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.70	0.90	e2	4.43	4.73
b1	0.45	0.55	L1	9.85	10.35
C	0.45	0.55	L2	1.25	1.75
D	6.45	6.75	L3	0.60	0.90
D1	5.20	5.40	K	0.00	0.10



0086-0755-8278-9056

www.doingter.cn