

General Description

These N-channel enhancement mode power mosfets used advanced trench technology design, provided excellent R_{ds(on)} and low gate charge. Which accords with the RoHS standard.

Product Summary			
V _{DS}	R _{DS(on)} (mΩ) Typ	I _D (A)	Q _g (Typ)
80V	4.8@10V	140	115nc

Features

- Fast switching
- Low on-resistance
- Low gate charge
- 100% Single Pulse Avalanche Energy Test

Mechanical Data

- Case:TO-263 Package

TO-263

D140N08D



Ordering Information

Part No.	Package Type	Package	Quality(box)
D140N08D	TO-263	Tape & Reel	800

Block Diagram

Pin Definition:

1. Gate
2. Drain
3. Source

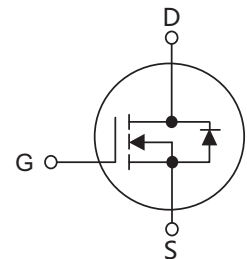


Table1 Absolute Maximum Ratings (T_C=25°C, unless otherwise specified)

Parameter	Symbol	TO-263	Unit
Drain-Source Voltage	V _{DS}	80	V
Gate-Source Voltage	V _{GS}	±25	V
Continuous Drain Current	I _D	T _C =25°C	140
		T _C =100°C	95
Pulsed Drain Current (Note 1)	I _{DM}	500	A
Single Pulse Avalanche Energy(Note 2)	E _{AS}	1225	mJ
Power Dissipation T _C =25°C	P _D	2	W
Isolation Voltage	V _{ISO}	/	V
Operating Junction and Storage Temperature	T _J /T _{STG}	-55 ~ +175	°C
Maximum Temperature for soldering	T _L	300	°C

Table 2. Thermal Characteristics

Parameter	Symbol	TO-252	Unit
Thermal resistance Junction to Case	$R_{\theta JC}$	0.79	$^{\circ}\text{C}/\text{W}$

Table 3. Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$	80	85	--	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=80\text{V}, V_{GS}=0\text{V}$	--	--	1	μA
Gate- Source Leakage Current	Forward	I_{GSS}	--	--	100	nA
	Reverse				-100	nA
On Characteristics(Note 4)						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	2	3	4	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=50\text{A}$	--	4.8	6.0	$\text{m}\Omega$
Dynamic Characteristics(Note 5)						
Input Capacitance	C_{ISS}	$V_{DS}=25\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$	--	4600	--	pF
Output Capacitance	C_{OSS}		--	650	--	pF
Reverse Transfer Capacitance	C_{RSS}		--	240	--	pF
Switching Characteristics (Note 5)						
Turn-On Delay Time	$t_d(\text{on})$	$V_{DS}=60\text{V}, I_D=40\text{A},$ $V_{GS}=10\text{V}, R_{GEN}=6\Omega$	--	28	--	ns
Turn-On Rise Time	t_r		--	18	--	ns
Turn-Off Delay Time	$t_d(\text{off})$		--	42	--	ns
Turn-Off Fall Time	t_f		--	55	--	ns
Total Gate Charge	Q_G	$V_{DS}=64\text{V}, I_D=60\text{A},$ $V_{GS}=10\text{V}$	--	115	--	nC
Gate-Source Charge	Q_{GS}		--	18	--	nC
Gate-Drain Charge	Q_{GD}		--	46	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0\text{V}, I_S=140\text{A}$	--	--	1.3	V
Maximum Continuous Drain-Source Diode Forward Current	I_S		--	--	140	A
Reverse Recovery Time	t_{rr}	$V_{GS}=0\text{V}, I_F=40\text{A}$ $di_F/dt=100\text{A}/\mu\text{s}$ (Note 1)	--	30	--	ns
Reverse Recovery Charge	Q_{RR}		--	52	--	nC

Notes: 1 Repetitive Rating:Pulse width limited by maximum junction temperature

2 $L=0.5\text{mH}, I_D=70\text{A}, V_{DD}=50\text{V}, V_{GS}=10\text{V}$, Starting $T_J=25^{\circ}\text{C}$

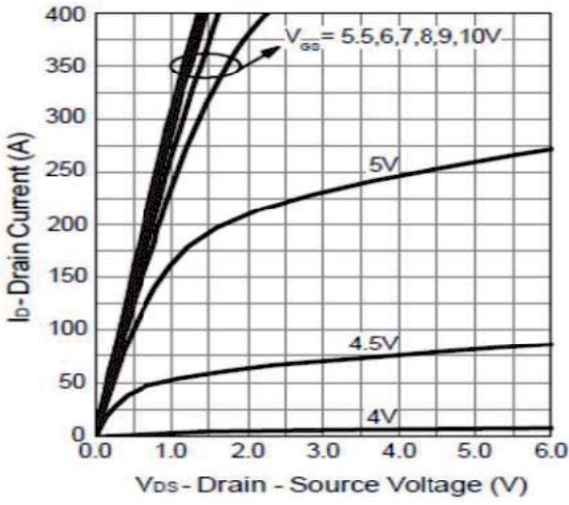
4 Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$

5 Guaranteed by design, not subject to production

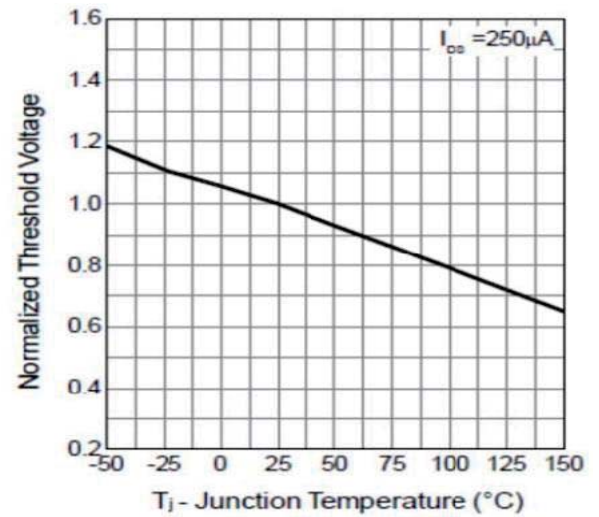
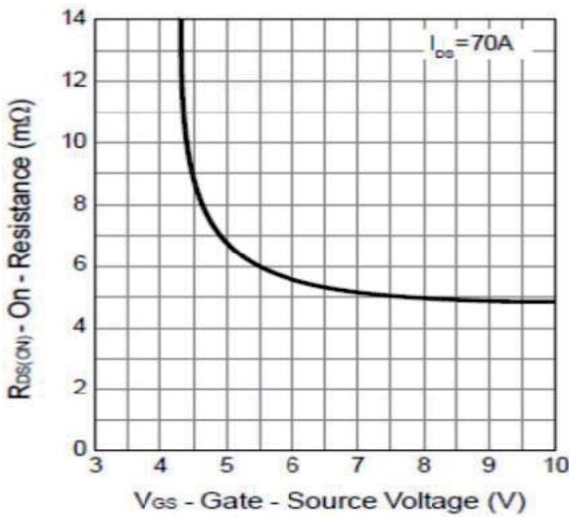
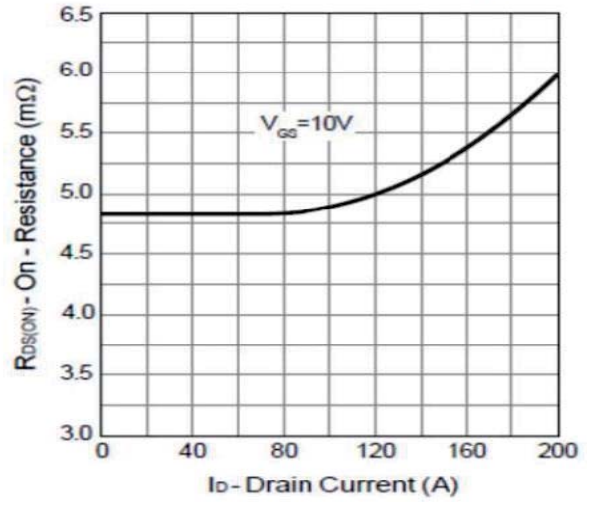


Typical characteristics diagrams

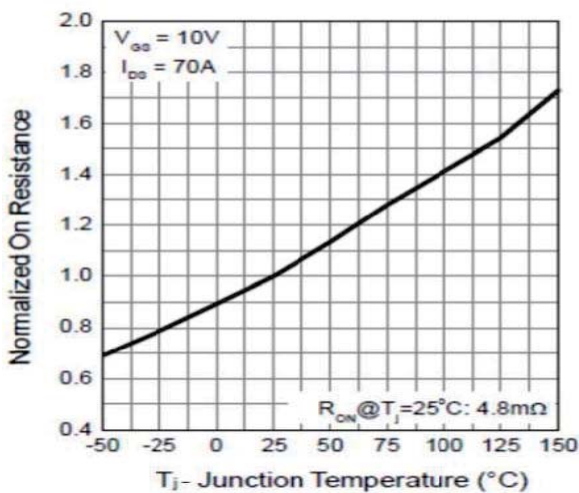
Output Characteristics



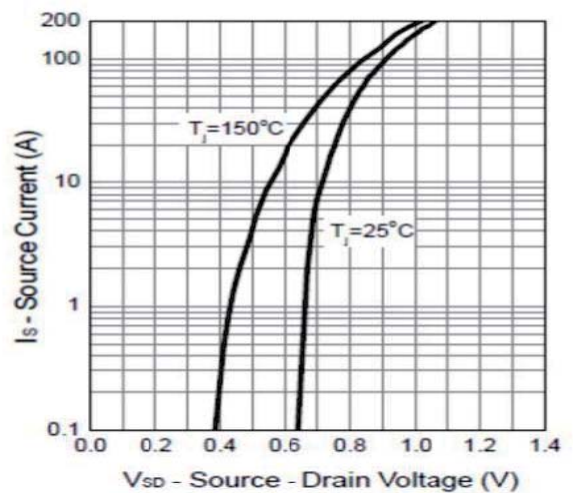
Drain-Source On Resistance



Drain-Source On Resistance



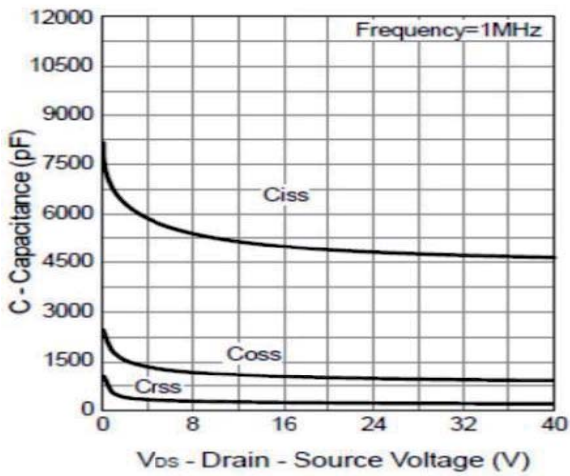
Source-Drain Diode Forward



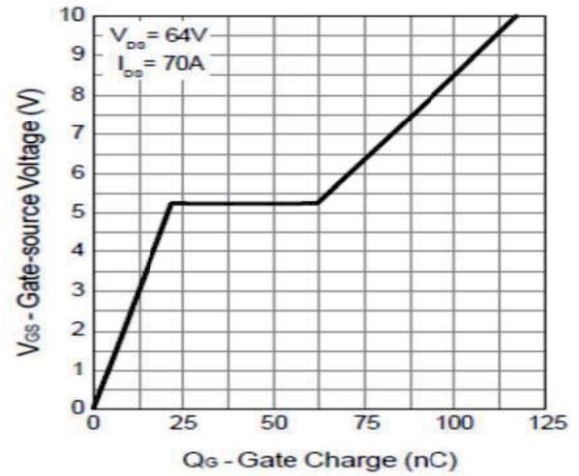


Typical characteristics diagrams

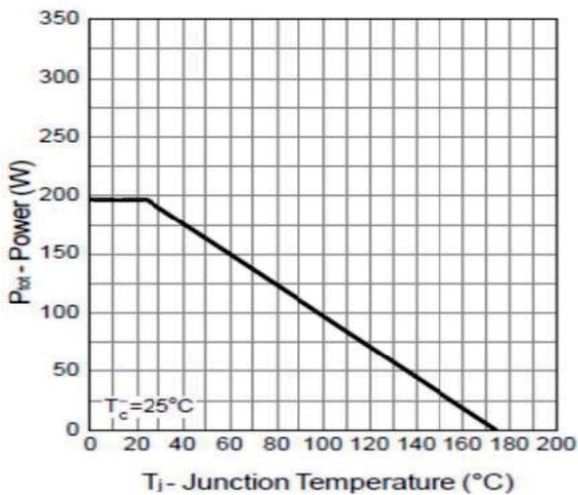
Capacitance



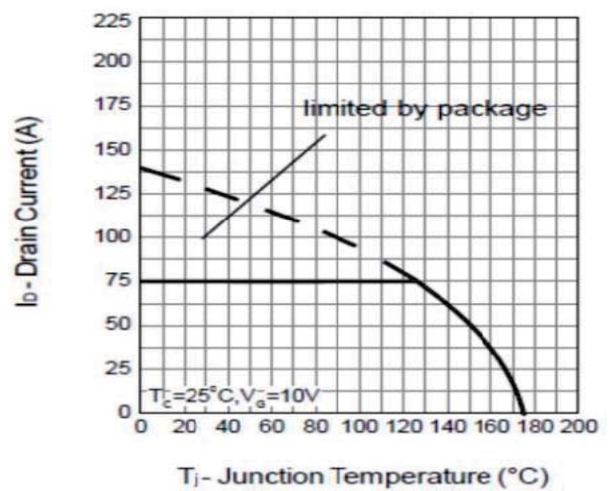
Gate Charge



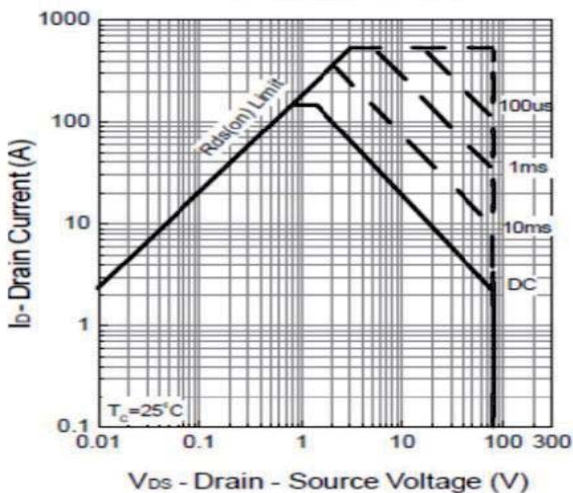
Power Dissipation



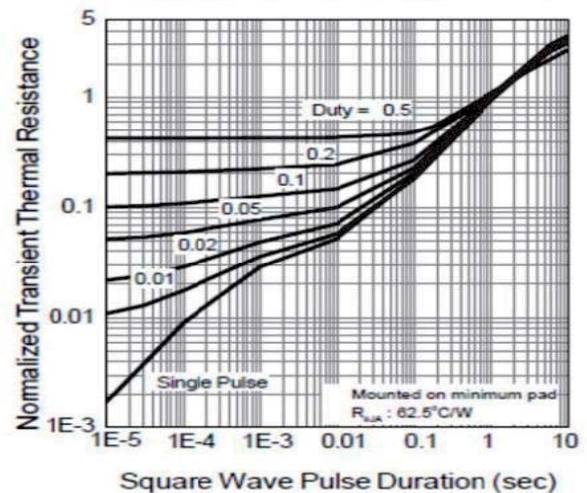
Drain Current



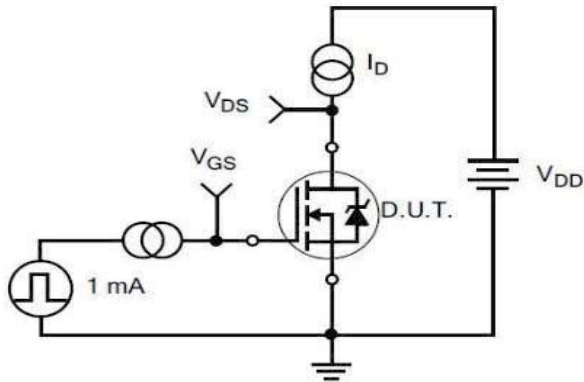
Safe Operation Area



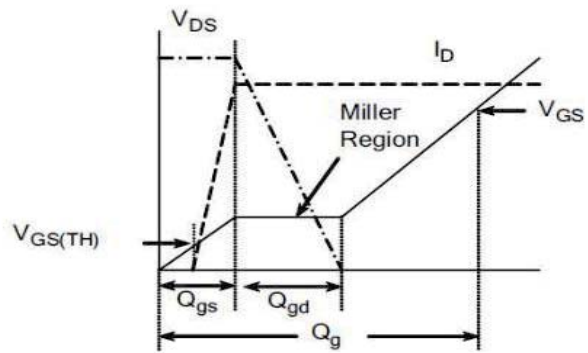
Thermal Transient Impedance



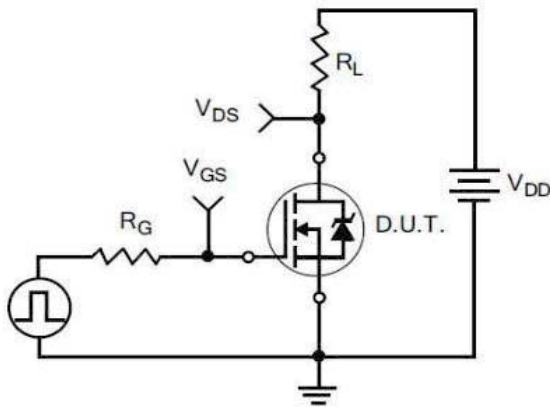
Typical characteristics diagrams



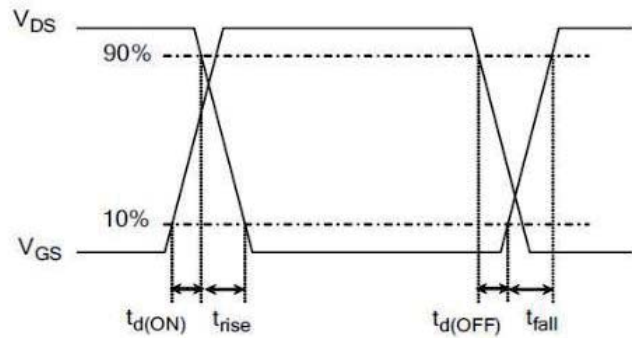
1) Gate Charge Test Circuit



2) Gate Charge Waveform



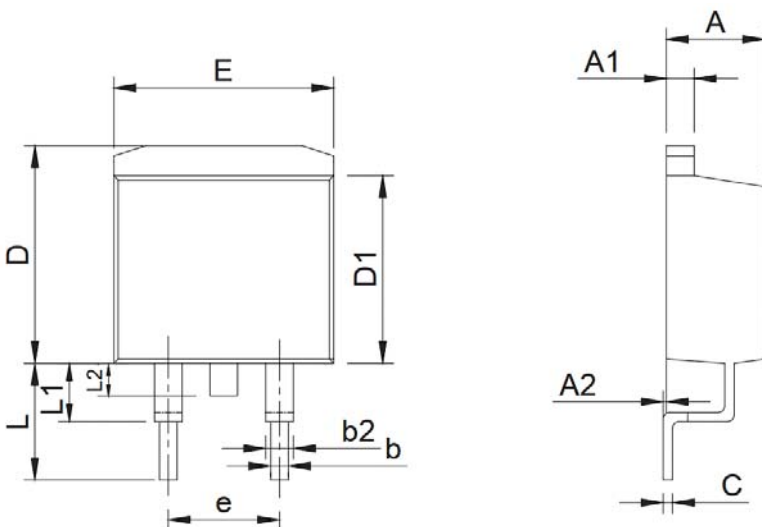
3) Resistive Switching Test Circuit



4) Resistive Switching Waveforms

Dimensions

TO-263 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	4.25	4.87	0.167	0.192
A1	1.07	1.47	0.042	0.058
A2	0	0.25	0.000	0.010
b	0.61	1.01	0.024	0.040
b1	1.2	1.34	0.047	0.053
C	0.3	0.6	0.012	0.024
D	9.48	10.84	0.373	0.427
D1	8.49	9.3	0.334	0.366
E	9.7	10.31	0.382	0.406
e	4.88	5.28	0.192	0.208
L	4.46	5.85	0.176	0.230
L1	1.33	2.33	0.052	0.092
L2	0	2.2	0.000	0.087

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