

FEATURES

- TrenchFET Power MOSFET
- 100% Rg tested
- High Current and Power handing capability
- AEC-Q101 qualified And PPAP capable



Product Summary			
V _{DS}	R _{DS(on)} (mΩ) Typ	I _D (A)	Q _G (Typ)
100V	20 @ 10V	20	38nc

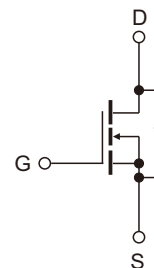
APPLICATIONS

- Load Switch
- Power Management
- PWM Control Circuit

MECHANICAL DATA

- Case: TO-252
- Terminals: Plated solderable per MIL-STD-750, method 2026
- Mounting Position: Any

TO-252



N-channel MOSFET

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Parameters		Symbol	Value	Unit
Drain-Source voltage		V _{DS}	100	V
Gate-Source Voltage		V _{GS}	±20	V
Continuous Drain Current (T _J = 150°C)	T _C =25°C	I _D	40	A
	T _C =100°C		30	
Pulsed Drain Current ¹⁾		I _{DM}	80	A
Maximum Power Dissipation @T _C =25°C		P _D	100	W
Junction and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

Thermal Resistance Ratings

Parameters	Symbol	Typ	Max	Unit
Junction to Ambient, Steady State ²⁾	R _{θJA}	45	62.5	°C/W
Junction to Case, Steady State ²⁾	R _{θJC}	1.0	1.25	

RATINGS AND CHARACTERISTICS OF D40N10M

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

Parameters	Symbol	Conditions	Min	Typ	Max	Unit
Static ³⁾						
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, T _C =25°C	-	-	1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V	-	-	±100	nA
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	1	-	3	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} = 10V, I _D =20A	-	20	25	mΩ
		V _{GS} = 6.0V, I _D =20A	-	21	-	
		V _{GS} = 4.5V, I _D =20A	-	23	-	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =20A	-	50	-	S
Dynamic						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	-	1880	-	pF
Output Capacitance	C _{oss}		-	145	-	
Reverse Transfer Capacitance	C _{rss}		-	95	-	
Total Gate Charge	Q _g	V _{DS} =50V, V _{GS} =10V, I _D =20A	-	26	-	nC
Gate-Source Charge	Q _{gs}		-	7.4	-	
Gate-Drain Charge	Q _{gd}		-	3.8	-	
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DS} =50V, I _D =20A, R _{GEN} =1.6Ω	-	6	-	ns
Rise Time	t _r		-	2	-	
Turn-off Delay Time	t _{D(off)}		-	18	-	
Fall Time	t _f		-	2	-	
Drain-Source Body Diode Characteristics						
Maximum Body-Diode Continuous Current	I _S		-	-	40	A
Diode Forward Voltage ³⁾	V _{SD}	I _S =40A, V _{GS} =0V	-	-	1.2	V
Body Diode Reverse Recovery Time ³⁾	t _{rr}	I _F =20A, di/dt=100A/μs	-	-	60	ns
Body Diode Reverse Recovery charge	Q _{rr}	I _F =20A, di/dt=100A/μs	-	-	160	nC

Notes: 1.Repetitive rating, pulse width limited by junction temperature T_J(MAX)=150°C

2.Device mounted on FR-4 PCB, 1 inch x 1 inch x 0.062 inch.

3.Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.

RATINGS AND CHARACTERISTICS OF D40N10M

Typical Performance Characteristics

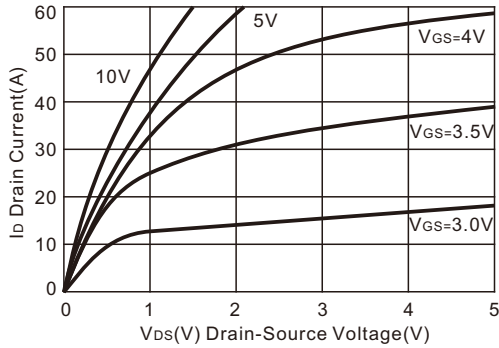


Fig1. Output Characteristics

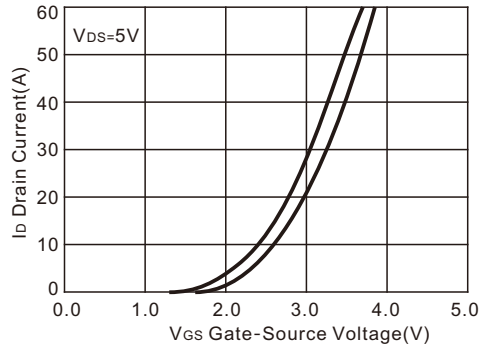


Fig2. Transfer Characteristics

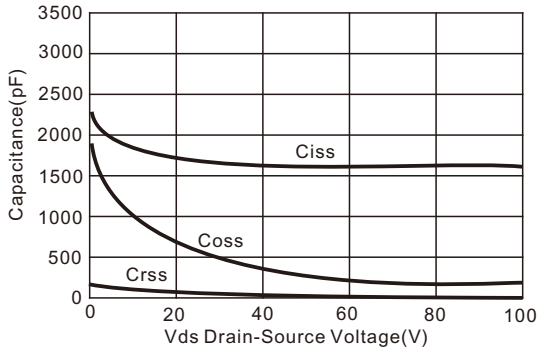


Fig3. Capacitance Characteristics

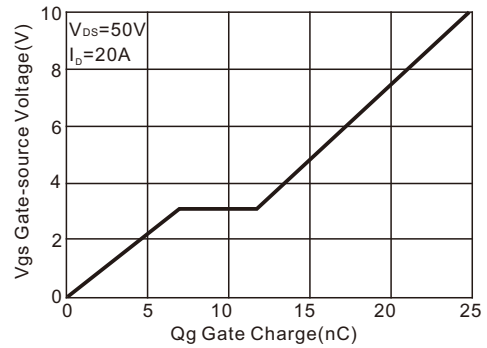


Fig4. Gate Charge

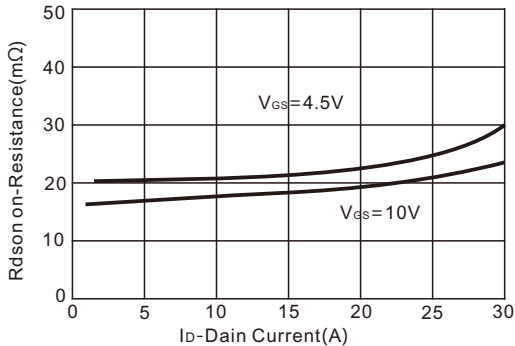


Fig5. Drain-Source on Resistance

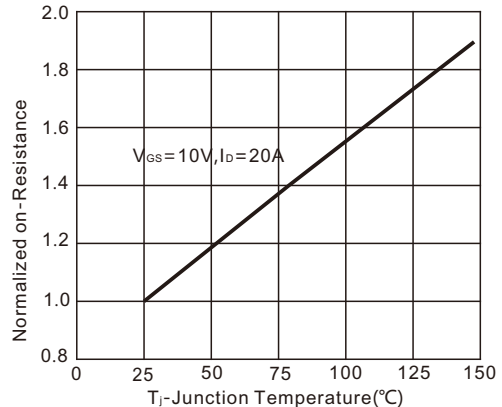


Fig6. Drain-Source on Resistance

RATINGS AND CHARACTERISTICS OF D40N10M

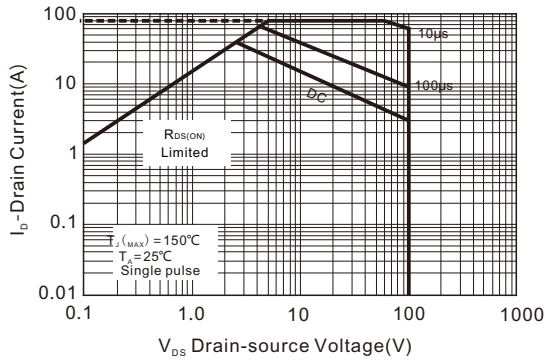


Fig7. Safe Operation Area

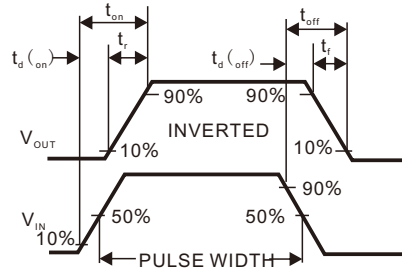
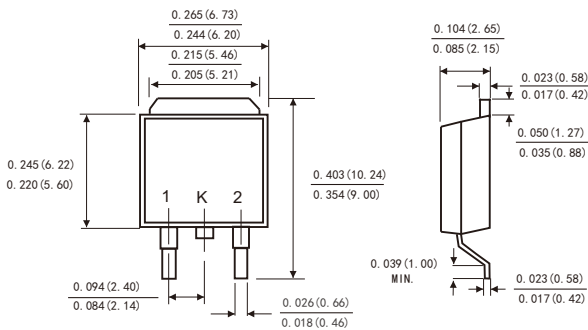


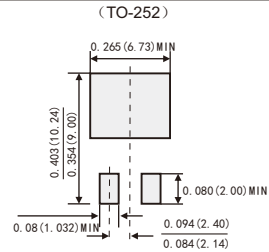
Fig8. Switching wave

PACKAGE OUTLINE DIMENSIONS

TO-252



Suggested Pad Layout



Dimensions in inches and (millimeters)