



TM35N06D

N-Channel Enhancement Mosfet

General Description

- Low $R_{DS(ON)}$
- RoHS and Halogen-Free Compliant

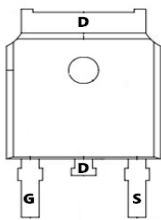
Applications

- Load switch
- PWM

General Features

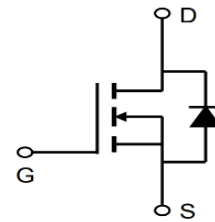
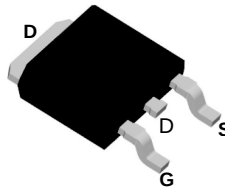
 $V_{DS} = 60V$ $I_D = 35A$ $R_{DS(ON)} = 22m\Omega$ (Typ.) @ $V_{GS} = 10V$

100% UIS Tested

100% R_g Tested

Marking: 35N06

D:TO-252-3 L

Absolute Maximum Ratings ($T_C = 25^\circ C$ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate-Source Voltage		± 30	V
I_D	Continuous Drain Current	$T_C = 25^\circ C$	35	A
		$T_C = 100^\circ C$	20	A
I_{DM}	Pulsed Drain Current ^{note1}		76	A
EAS	Single Pulsed Avalanche Energy ^{note2}		39	mJ
P_D	Power Dissipation	$T_C = 25^\circ C$	41.7	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		50	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	$^\circ C$

TM35N06D
N-Channel Enhancement Mosfet
Electrical Characteristics ($T_J = 25^\circ\text{C}$, unless otherwise noted)

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics							
Drain-Source Breakdown Voltage		V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	60	-	-	V
Gate-Body Leakage Current		I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	T _J =25°C	I _{DSS}	V _{DS} = 60V, V _{GS} = 0V	-	-	1	μA
	T _J =100°C			-	-	100	
Gate-Threshold Voltage		V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.2	1.6	2.5	V
Drain-Source on-Resistance ⁴		R _{DS(on)}	V _{GS} = 10V, I _D = 10A	-	22	28	mΩ
			V _{GS} = 4.5V, I _D = 5A	-	29	35	
Forward Transconductance ⁴		g _{fs}	V _{DS} = 5V, I _D = 10A	-	15.5	-	S
Dynamic Characteristics ⁵							
Input Capacitance		C _{iss}	V _{DS} = 30V, V _{GS} =0V, f =1MHz	-	1155	-	pF
Output Capacitance		C _{oss}		-	60	-	
Reverse Transfer Capacitance		C _{rss}		-	49	-	
Gate Resistance		R _G	f =1MHz	-	1.2	-	Ω
Switching Characteristics ⁵							
Total Gate Charge		Q _g	V _{GS} = 10V, V _{DD} = 30V, I _D = 10A	-	22	-	nC
Gate-Source Charge		Q _{gs}		-	4.2	-	
Gate-Drain Charge		Q _{gd}		-	6.9	-	
Turn-on Delay Time		t _{d(on)}	V _{GS} =10V, V _{DD} = 30V, R _G = 3Ω, I _D = 10A	-	6.4	-	ns
Rise Time		t _r		-	15.3	-	
Turn-off Delay Time		t _{d(off)}		-	25	-	
Fall Time		t _f		-	7.6	-	
Body Diode Reverse Recovery Time		t _{rr}	I _F =10A, dI _F /dt=100A/μs	-	26	-	ns
Body Diode Reverse Recovery Charge		Q _{rr}		-	45	-	nC
Drain-Source Body Diode Characteristics							
Diode Forward Voltage ⁴		V _{SD}	I _S = 10A, V _{GS} = 0V	-	-	1.2	V
Continuous Source Current	T _C =25°C	I _S	-	-	-	35	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)} = 150^\circ\text{C}$
2. The EAS data shows Max. rating . The test condition is $V_{DD} = 25V, V_{GS} = 10V, L = 0.4\text{mH}, I_{AS} = 14A$
3. The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
5. This value is guaranteed by design hence it is not included in the production test.

TM35N06D

N-Channel Enhancement Mosfet

Typical Characteristics

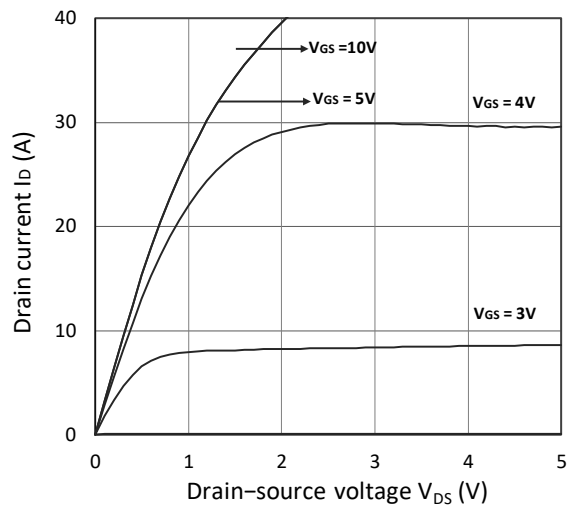


Figure 1. Output Characteristics

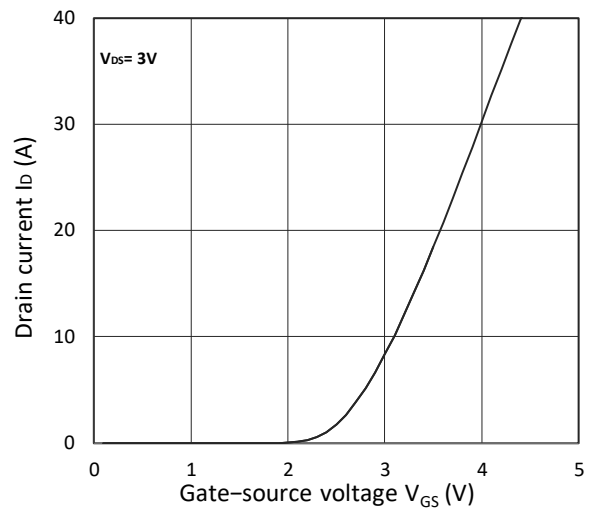


Figure 2. Transfer Characteristics

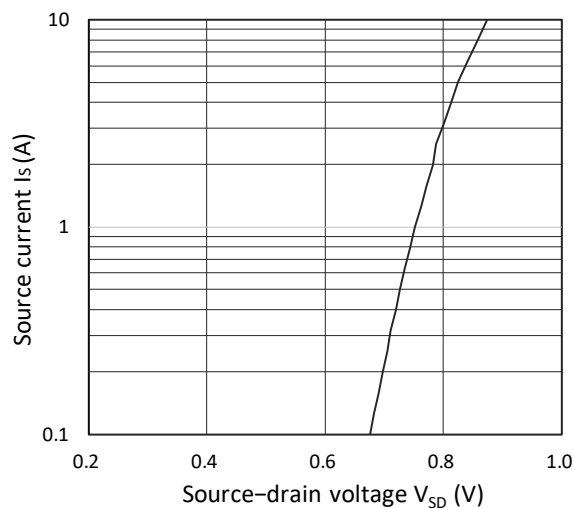


Figure 3. Forward Characteristics of Reverse

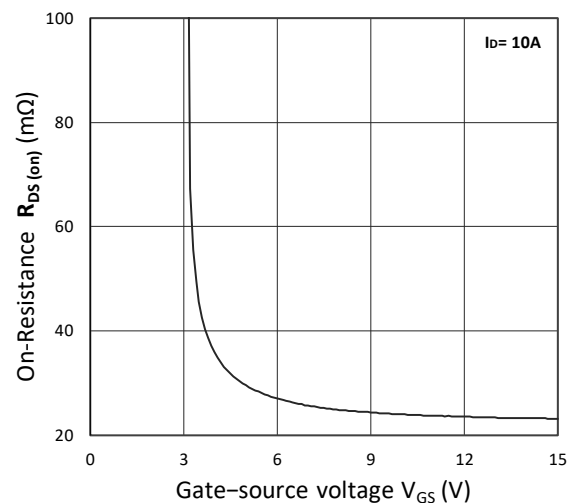


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

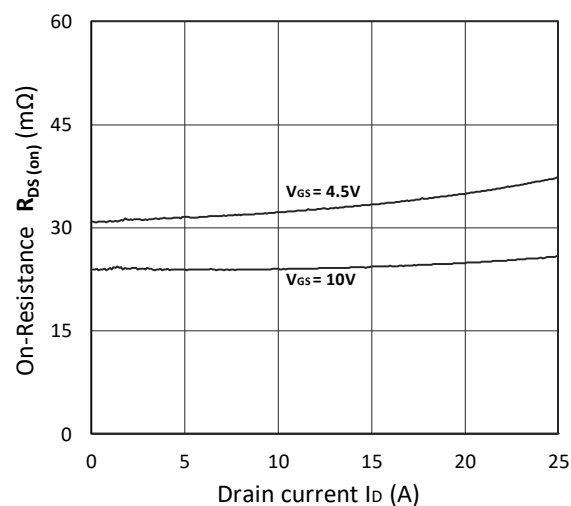


Figure 5. $R_{DS(ON)}$ vs. I_D

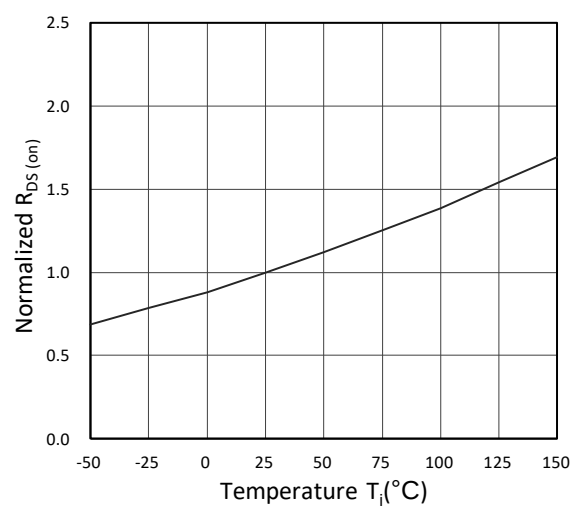


Figure 6. Normalized $R_{DS(ON)}$ vs. Temperature

TM35N06D

N-Channel Enhancement Mosfet

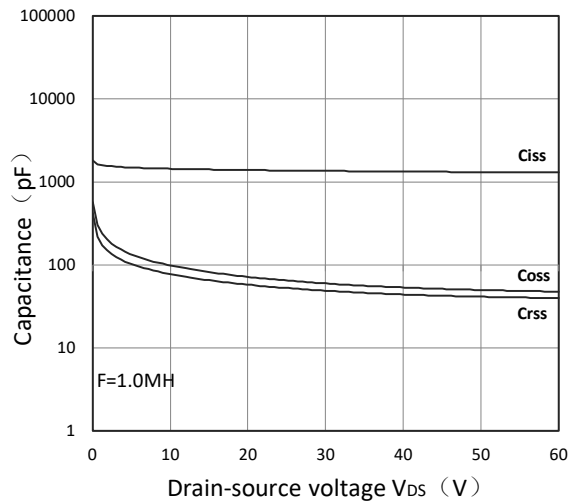


Figure 7. Capacitance Characteristics

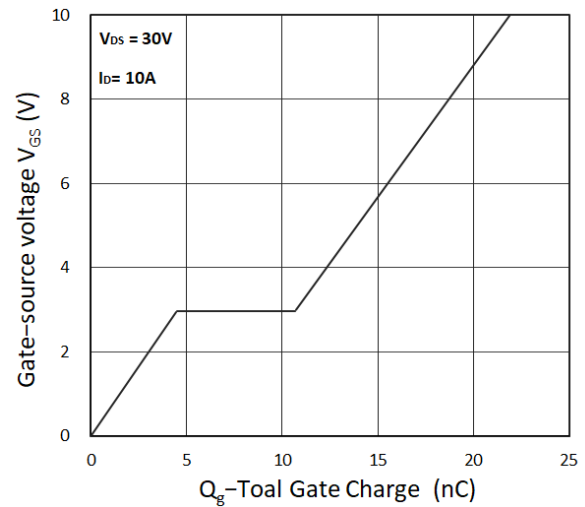


Figure 8. Gate Charge Characteristics

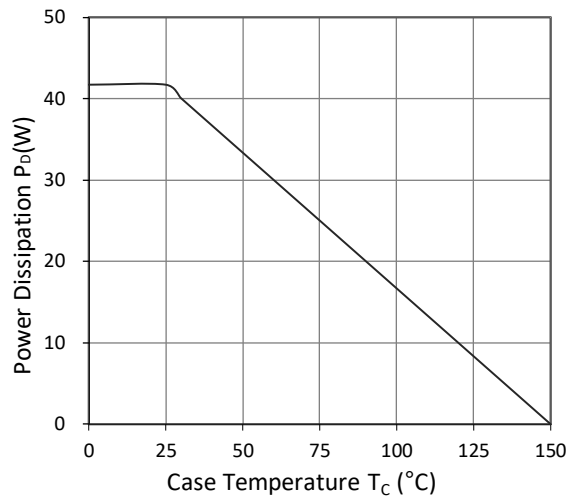


Figure 9. Power Dissipation

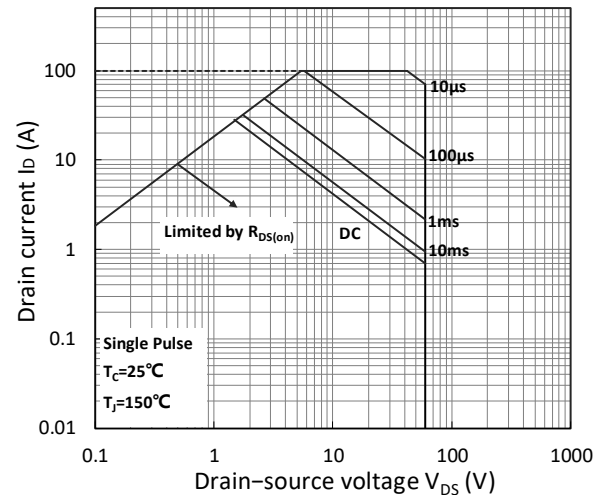


Figure 10. Safe Operating Area

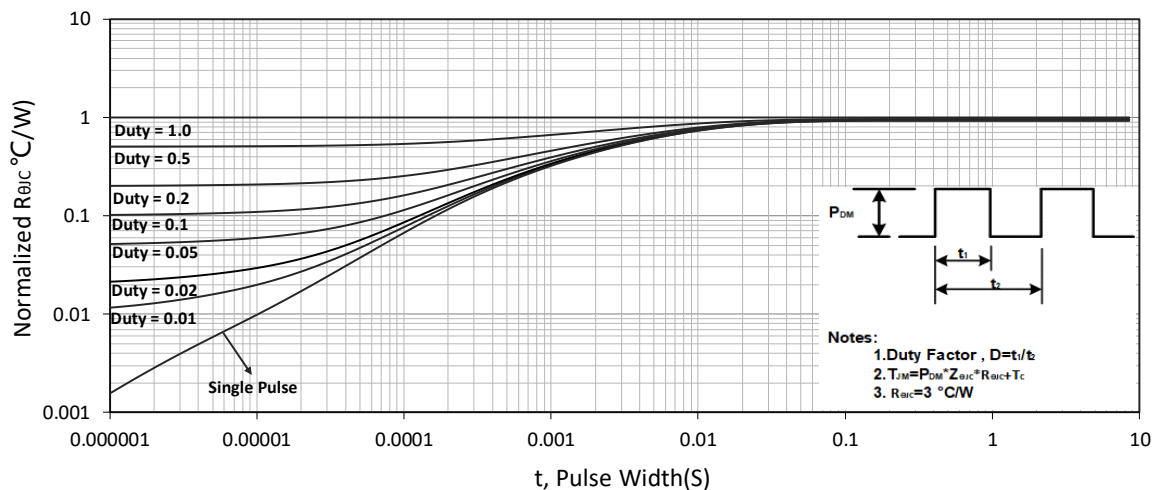
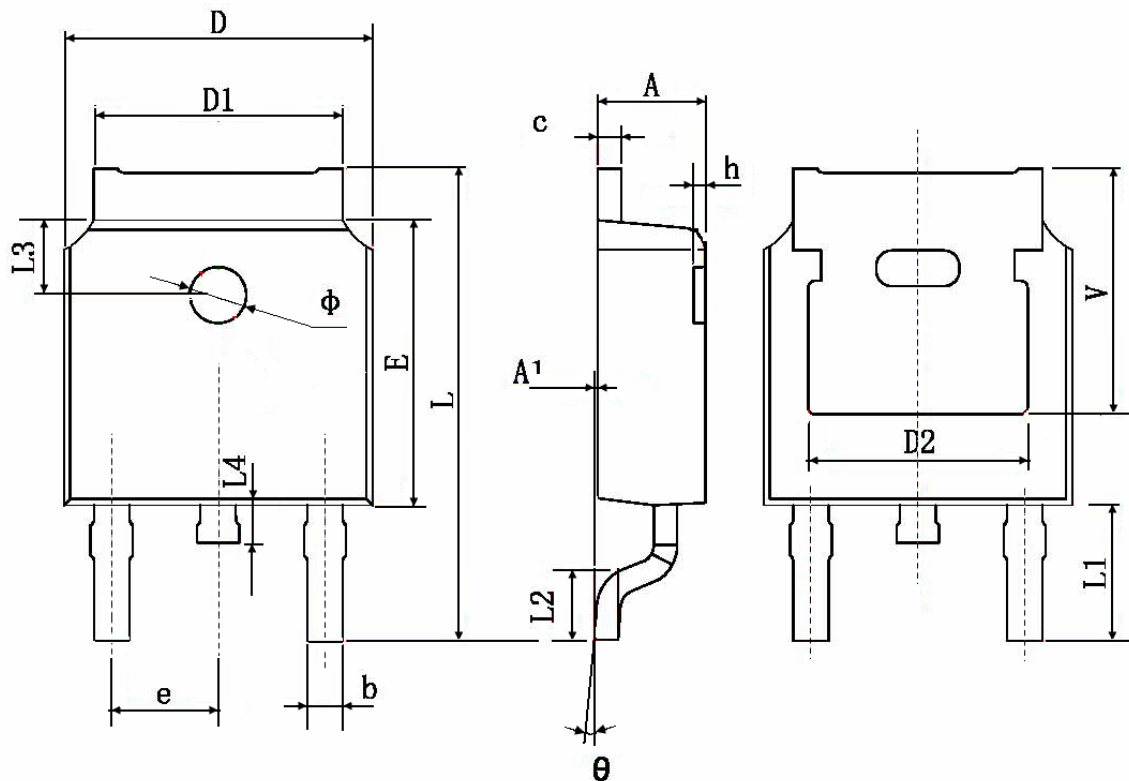


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Information: TO-252-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	