

Description

This is 60V 130A N-channel mosfet in a TO-252 plastic package.

Applications

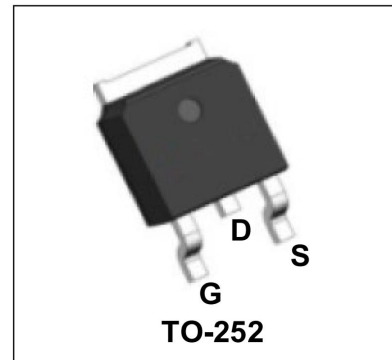
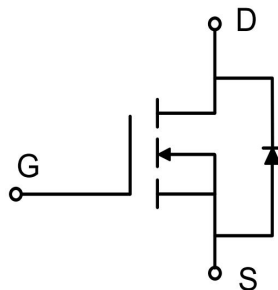
- Power Management in Switches
- DC/DC Converter

Features

- $V_{DS} = 60V$, $I_D = 130A$
 $R_{DS(on)} < 3.4m\Omega @ V_{GS} = 10V$
 $R_{DS(on)} < 4.3m\Omega @ V_{GS} = 4.5V$
- Low $R_{DS(on)}$
- Low Gate Charge
- 100% EAS Guaranteed
- RoHS and Halogen-Free Compliant

V_{DSS}	$R_{DS(on)(typ)}$	I_D
60 V	2.5m Ω	130 A

Schematic & PIN Configuration



Absolute Maximum Rating (TA=25° C unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source voltage		V_{DS}	60	V
Gate-Source voltage		V_{GS}	±20	V
Continuous Drain Current	T _C =25°C	I_D	130	A
	T _C =100°C		82.3	
Pulsed Drain Current ¹		I_{DM}	520	A
Single Pulse Avalanche Energy ²		EAS	304.2	mJ
Total Power Dissipation	T _C =25°C	P_D	96	W
Operating Junction and Storage Temperature Range		T_J , T_{STG}	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient ³	R_{θJA}	48	°C/W
Thermal Resistance from Junction-to-Case	R_{θJC}	1.3	°C/W

Electrical Characteristics (T_J=25°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	1.8	2.5	V
Drain-Source On-Resistance ⁴		R _{DS(on)}	V _{GS} = 10V, I _D = 20A	-	2.5	3.4	mΩ
			V _{GS} = 4.5V, I _D = 10A	-	3.3	4.3	
Forward Transconductance ⁴		g _{fs}	V _{DS} = 5V, I _D = 20A	-	78	-	S
Dynamic Characteristics ⁵							
Input Capacitance		C _{iss}	V _{DS} = 30V, V _{GS} =0V, f =1MHz	-	4950	-	pF
Output Capacitance		C _{oss}		-	1260	-	
Reverse Transfer Capacitance		C _{rss}		-	25	-	
Gate Resistance		R _G	f =1MHz	-	2.4	-	Ω
Switching Characteristics ⁵							
Total Gate Charge		Q _g	V _{GS} = 10V, V _{DS} = 30V, I _D = 20A	-	73.5	-	nC
Gate-Source Charge		Q _{gs}		-	12.5	-	
Gate-Drain Charge		Q _{gd}		-	16	-	
Turn-on Delay Time		t _{d(on)}	V _{GS} =10V, V _{DD} = 30V, R _G = 3Ω, I _D = 20A	-	20	-	ns
Rise Time		t _r		-	17	-	
Turn-off Delay Time		t _{d(off)}		-	84	-	
Fall Time		t _f		-	25	-	
Body Diode Reverse Recovery Time		t _{rr}	I _F =20A , dI/dt=100A/μs	-	25	-	ns
Body Diode Reverse Recovery Charge		Q _{rr}		-	90	-	nC
Drain-Source Body Diode Characteristics							
Diode Forward Voltage ⁴		V _{SD}	I _S = 20A, V _{GS} = 0V	-	-	1.2	V
Continuous Source Current	T _C =25°C	I _S	-	-	-	130	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=150°C
2. The EAS data shows Max. rating . The test condition is V_{DD}=25V, V_{GS}=10V, L=0.4mH, I_{AS}=39A
3. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
5. This value is guaranteed by design hence it is not included in the production test.

Electrical Characteristic Curve

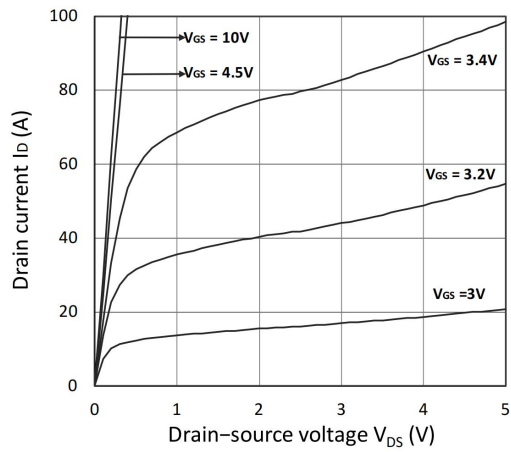


Figure 1. Output Characteristics

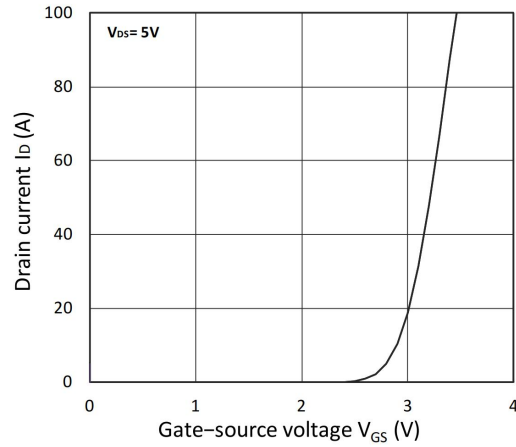


Figure 2. Transfer Characteristics

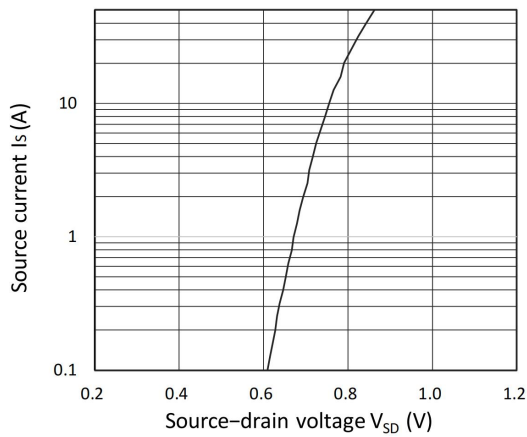


Figure 3. Forward Characteristics of Reverse

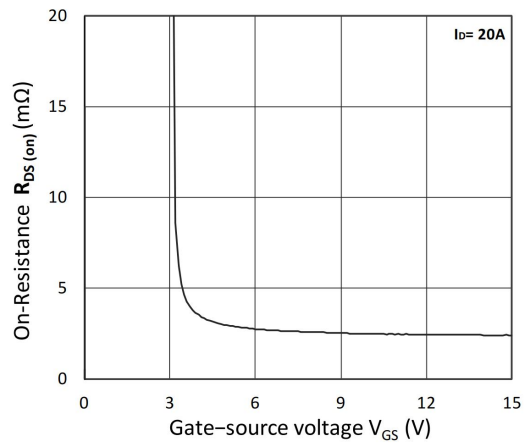


Figure 4. $R_{DS(on)}$ vs. V_{GS}

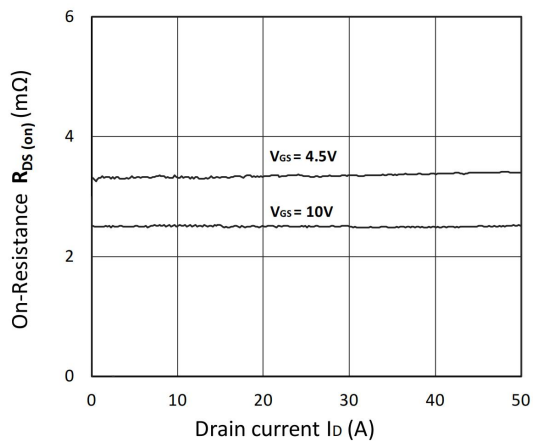


Figure 5. $R_{DS(on)}$ vs. I_D

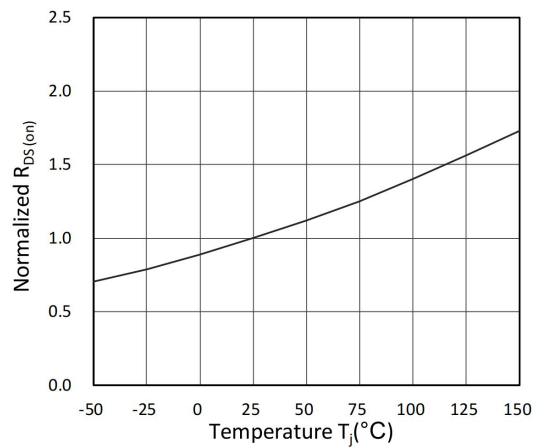


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

Electrical Characteristic Curve

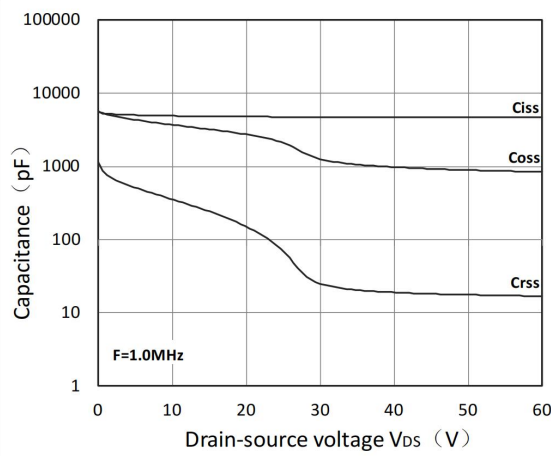


Figure 7. Capacitance Characteristics

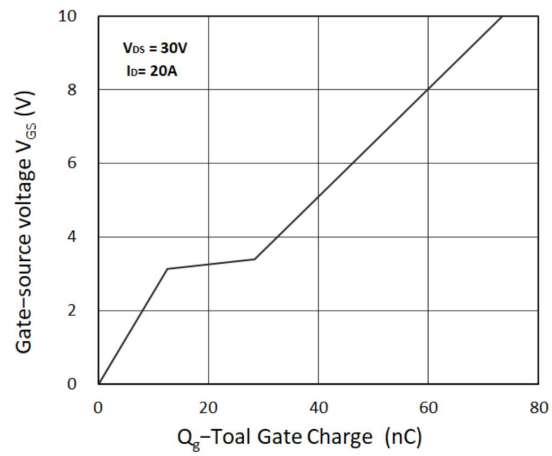


Figure 8. Gate Charge Characteristics

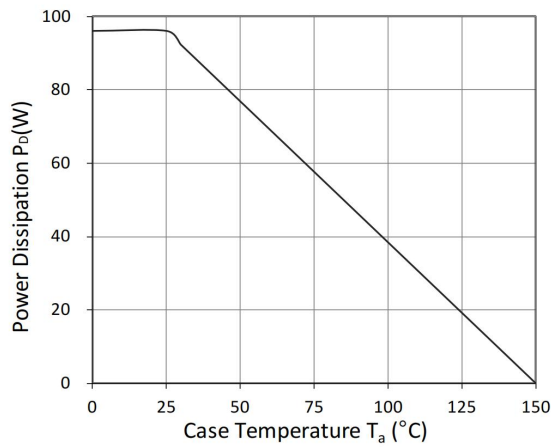


Figure 9. Power Dissipation

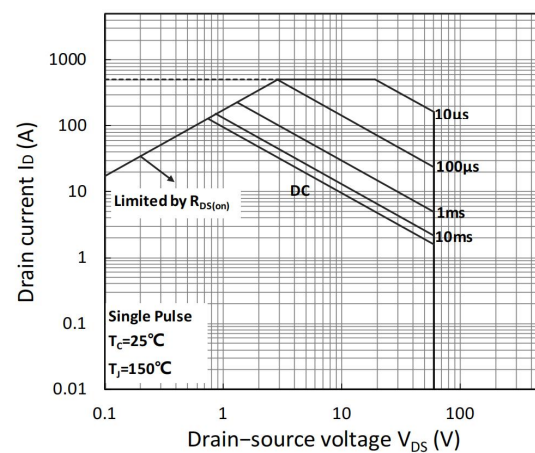


Figure10. Safe Operating Area

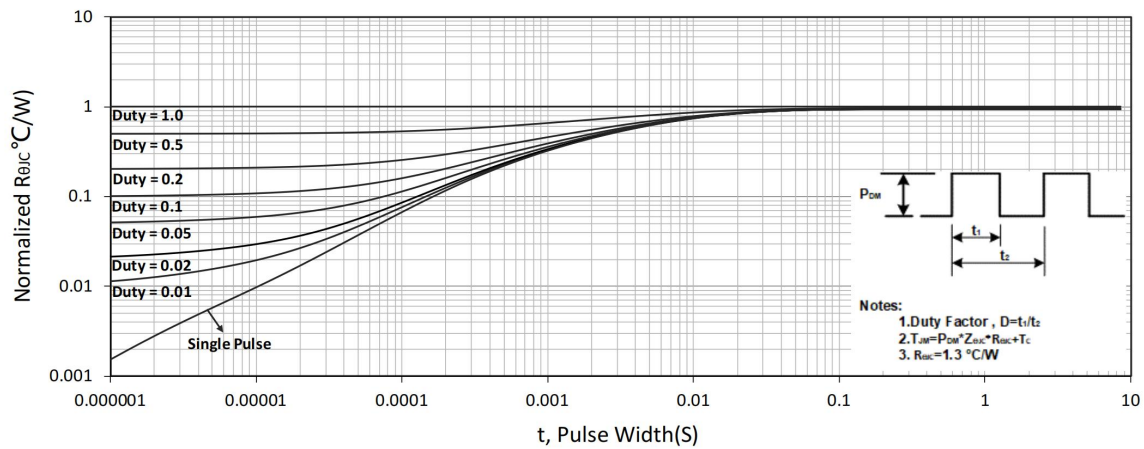


Figure 11. Normalized Maximum Transient Thermal Impedance

Test Circuit

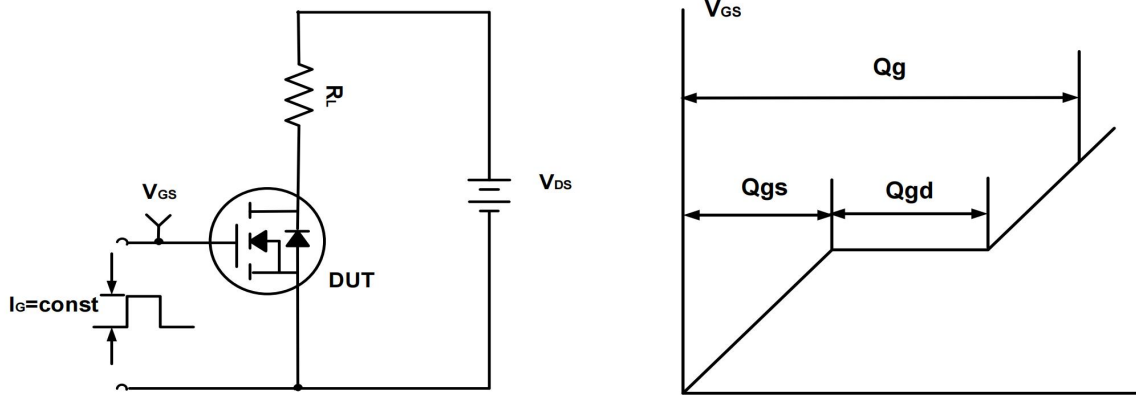


Figure A. Gate Charge Test Circuit & Waveforms

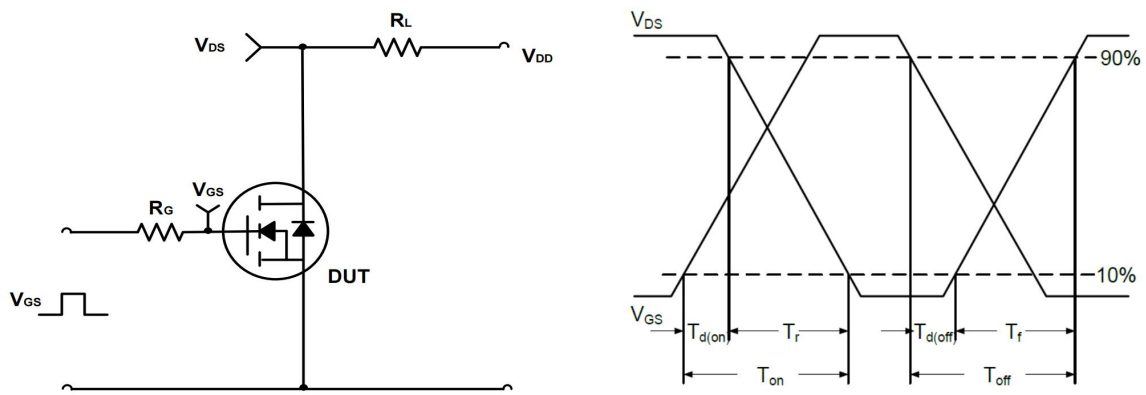


Figure B. Switching Test Circuit & Waveforms

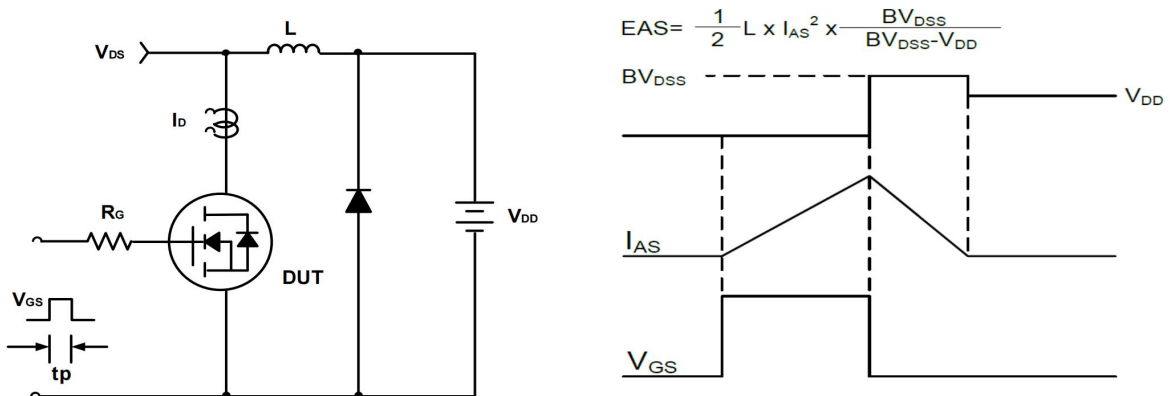
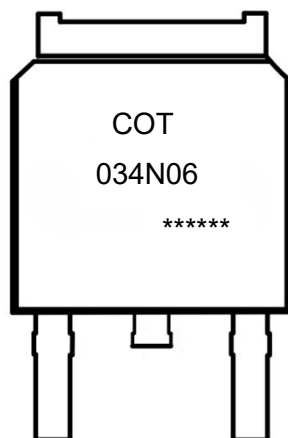


Figure C. Unclamped Inductive Switching Circuit & Waveforms

Marking Instructions



Note:

COT: Company

034N06: Product Type.

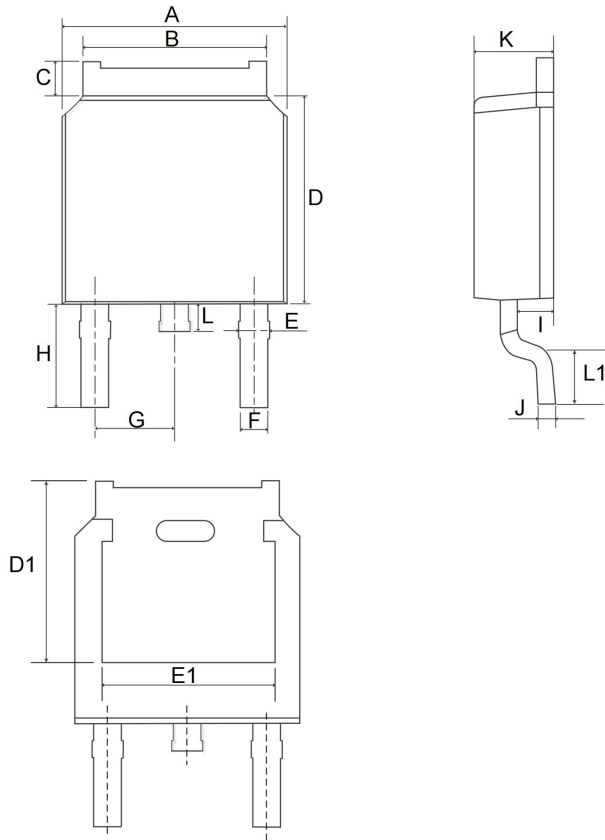
*****: *:Inner Code * : Year Code **: Week Code **: Lot Code.

Ordering Information

Part	Package	Marking	Packing method
CT034N06DP	TO-252	034N06	Tape and Reel

Mechanical Dimensions for TO-252

COMMON DIMENSIONS



SYMBOL	MM	
	MIN	MAX
A	6.40	6.80
B	5.13	5.50
C	0.88	1.28
D	5.90	6.22
D1	5.35REF	
E	0.68	1.10
E1	4.83REF	
F	0.68	0.91
G	2.29REF	
H	2.90REF	
I	0.85	1.17
J	0.51REF	
K	2.10	2.50
L	0.40	1.00
L1	1.50REF	