Description

This 100A, 60V N-Channel MOSFET in a TO-252 Plastic Package.

Applications

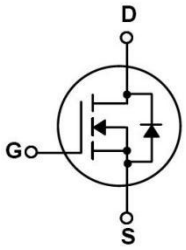
These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies

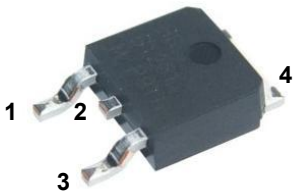
Features

- Low $R_{DS(on)}$,
- Low gate charge,
- Low C_{iss},
- Fast switching.
- Halogen-free Product.

V_{DSS}	$R_{DS(on)}$ (Typ)	I_D
60V	5.9mΩ	100A

Equivalent Circuit & Pinning





PIN1：Gate PIN 2：Drain PIN 3：Source PIN 4：Drain

Absolute Maximum Ratings(Ta=25℃)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	60	V
Drain Current	I_D(Tc=25℃)	100	A
Peak Drain Current	I_{DM}	380	A
Gate-Source Voltage	V_{GSS}	±20	V
Single Pulsed Avalanche Energy	E_{AS}	602	mJ
Avalanche Current	I_{AS}	38.9	A
Total Power Dissipation	P_D(Tc=25℃)	60	W
Junction and Storage Temperature Range	T_J,T_{STG}	-55 to 150	℃
Thermal Resistance-Junction to Case	$R_{\theta JC}$	2.1	℃/W
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	62.5	

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V V_{GS}=0V			1	μA
		V_{DS}=60V V_{GS}=0V T_J=125℃			10	μA
Gate-Body leakage current	I_{GSS}	V_{GS}=±20V V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=250μA	2	2.6	4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V I_D=50A		5.9	7	mΩ

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Diode Forward Voltage	V_{SD}	I_S=1A V_{GS}=0V		0.6	1.2	V
Input Capacitance	C_{iss}	V_{GS}=0V V_{DS}=25V, f=1.0MHz		4920		pF
Output Capacitance	C_{oss}			295		
Reverse Transfer Capacitance	C_{rss}			133		
Gate resistance	R_g	V_{GS}=0V V_{DS}=0V, f=1MHz		1.2		Ω
Total Gate Charge	Qg(10V)	V_{GS}=10V V_{DS}=30V I_D=50A		53	75	nC
Total Gate Charge	Q_g(4.5V)			22	31	
Gate Source Charge	Q_{gs}			17		
Gate Drain Charge	Q_{gd}			5		
Turn-On DelayTime	$t_{D(on)}$	V_{DD}=30V I_D=50A V_{GS}=10V R_G=2.5Ω		18		ns
Turn-On Rise Time	tr			20		
Turn-Off DelayTime	t_D(off)			33		
Turn-Off Fall Time	tf			4		

A. The value of R_{qJA} is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The Power dissipation PDSM is based on R_{qJA} and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design, and the maximum temperature of 150°C may be used if the PCB allows it.
B. The power dissipation PD is based on $T_{J(MAX)}$=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.
C. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and duty cycles to keep initial T_J =25°C.
D. The R_{qJA} is the sum of the thermal impedance from junction to case R_{qJC} and case to ambient.
E. The static characteristics in Figures 1 to 6 are obtained using <300ms pulses, duty cycle 0.5% max.
F. These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of $T_{J(MAX)}$=150°C. The SOA curve provides a single pulse rating.
G. The maximum current limited by package.
H. These tests are performed with the device mounted on 1 in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.

Electrical Characteristic Curve

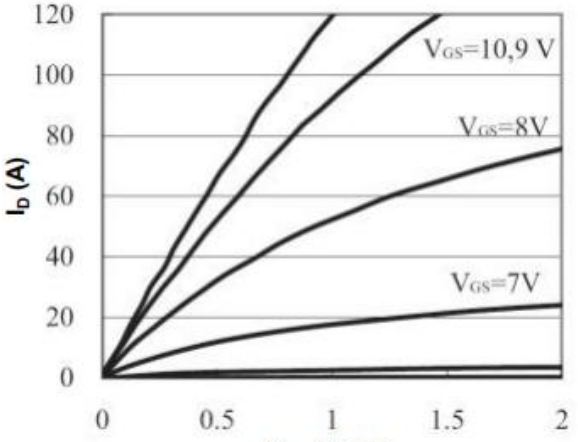


Fig 1: On-Region Characteristics

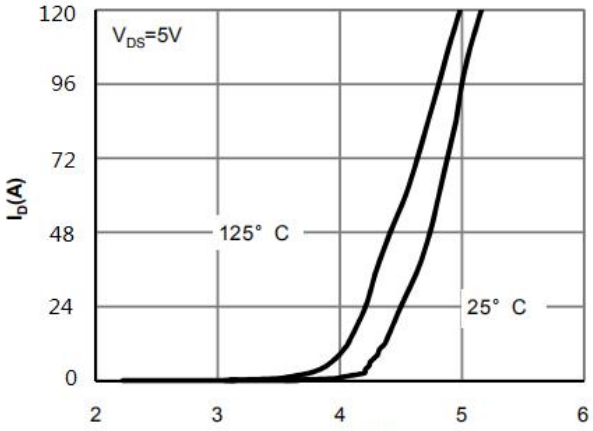


Figure 2: Transfer Characteristics

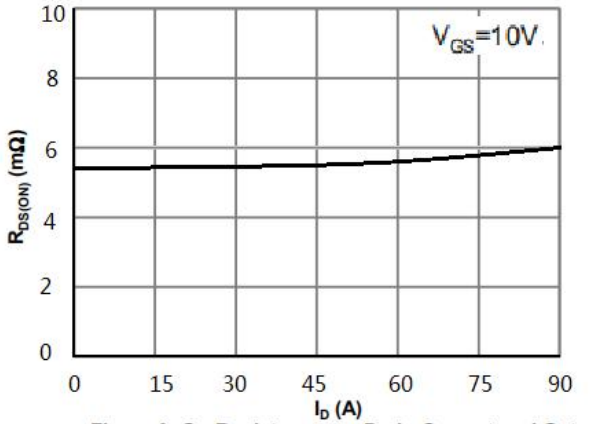


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

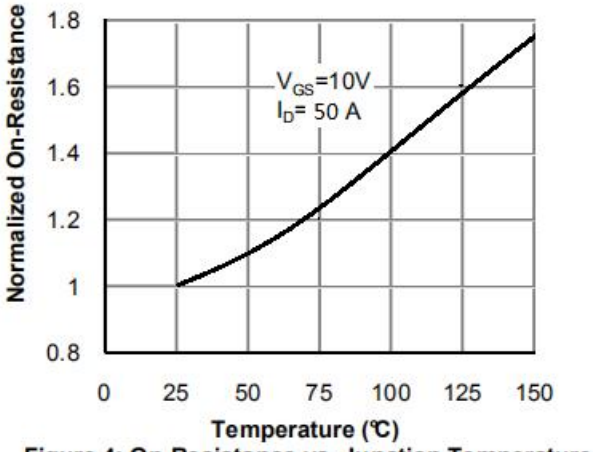


Figure 4: On-Resistance vs. Junction Temperature

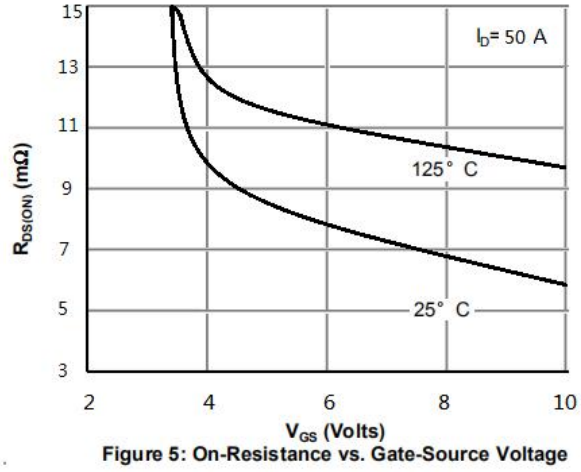


Figure 5: On-Resistance vs. Gate-Source Voltage

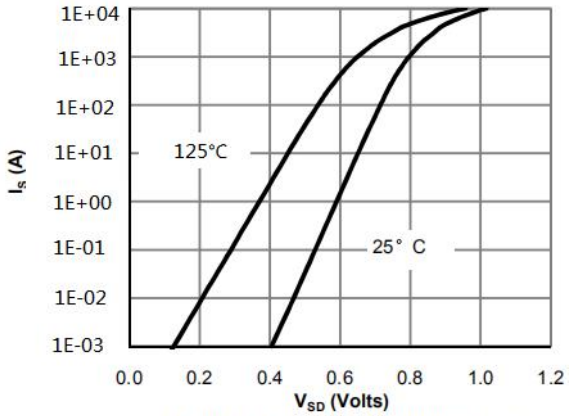


Figure 6: Body-Diode Characteristics

Electrical Characteristic Curve

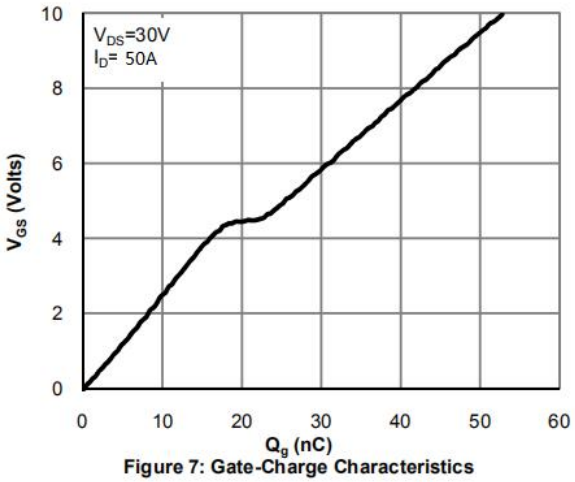


Figure 7: Gate-Charge Characteristics

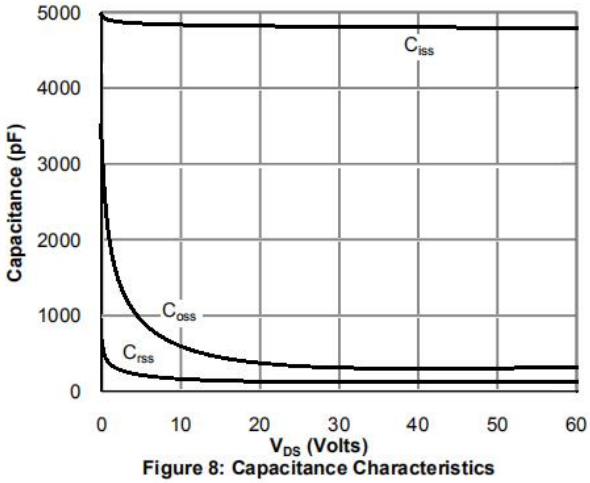


Figure 8: Capacitance Characteristics

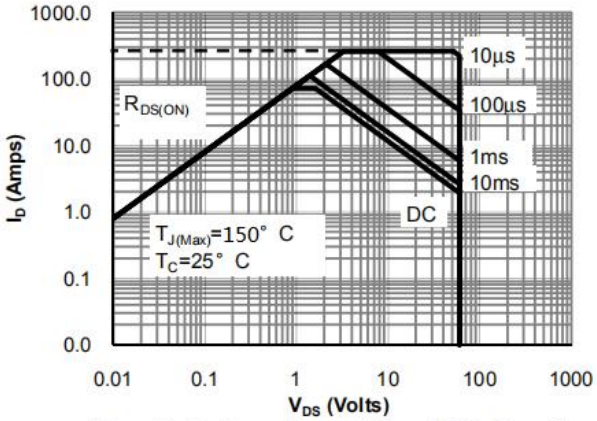


Figure 9: Maximum Forward Biased Safe Operating Area

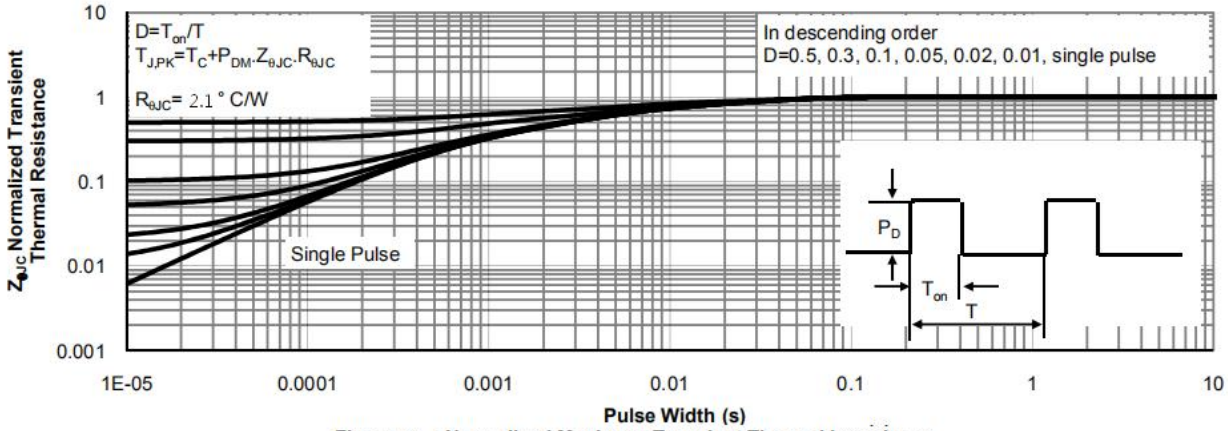
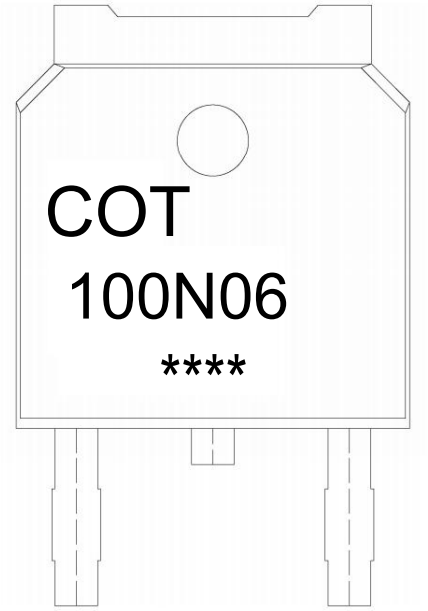


Figure 10 : Normalized Maximum Transient Thermal Impedance

Marking Instructions



Note:

COT: Company Logo

100N06: Product Type.

****: Lot No. Code, code change with Lot No.

Packaging SPEC.

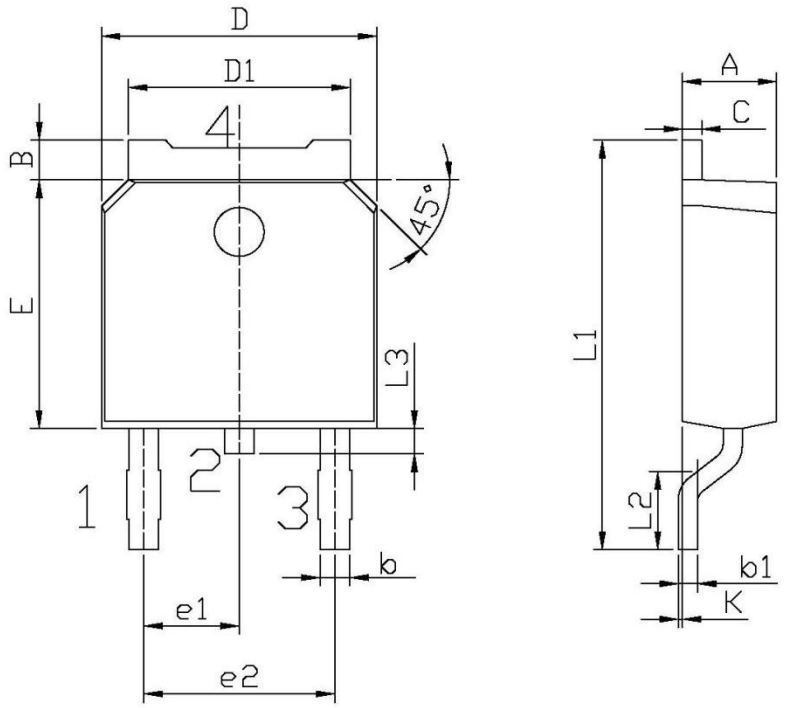
REEL INFORMATION

Package Type	Units					Dimension (unit: mm³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
TO-252	2,500	2	5,000	6	30,000	13″ ×16	360×360×50	380×335×366

TUBE INFORMATION

Package Type	Units					Dimension (unit: mm³)		
	Units/Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Tube	Inner Box	Outer Box
TO-252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

Package Outline Dimensions



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	1.70	2.00
D	6.45	6.75	L3	0.60	0.90
D1	5.10	5.50	K	0.00	0.10

TO-252