

Description

This 30V,100A N-Channel MOSFET in a TO-252 Plastic Package.

Applications

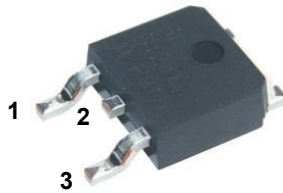
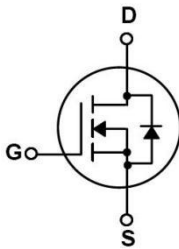
These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies.

Features

- Low $R_{DS(on)}$
- Low gate charge
- Low C_{rss}
- Fast speed switching
- Halogen-free Product

V_{DSS}	$R_{DS(on)}$ Typ	I_D
30V	3.5m Ω	100A

Equivalent Circuit & Pinning



PIN1 : Gate PIN 2 : Drain PIN 3 : Source

Absolute Maximum Ratings(Ta=25℃)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V _{DSS}	30	V
Drain Current		I _D (T _c =25°C)	100	A
Peak Drain Current		I _{DM}	350	A
Gate-Source Voltage		V _{GSS}	±20	V
Avalanche Current		I _{AS}	24.5	A
Single Pulsed Avalanche Energy		E _{AS}	294	mJ
Total Power Dissipation		P _D (T _c =25°C)	100	W
Junction and Storage Temperature Range		T _J , T _{STG}	-55 to 150	°C
Thermal resistance, junction - ambient	t ≤ 10s	R _{θJA}	20	°C/W
	Steady-State		50	
Thermal resistance, junction - case	Steady-State	R _{θJC}	1.8	

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Zero Gate Voltage Drain Current	BV_{DSS}	$V_{GS}=0V$ $I_D=250\mu A$	30	33		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V$ $V_{GS}=0V$			1	μA
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			± 0.1	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	1.0	1.5	3.0	V
Forward On Voltage	V_{SD}	$I_S=20A$ $V_{GS}=0V$			1.2	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=50A$		3.5	3.9	m Ω
		$V_{GS}=4.5V$ $I_D=40A$		5.1	8	m Ω
Gate resistance	R_g	$V_{GS}=0V$ $V_{DS}=0V$ $f=1MHz$		3		Ω
Input Capacitance	C_{iss}	$V_{GS}=0V$ $f=1.0MHz$ $V_{DS}=25V$		2750		pF
Output Capacitance	C_{oss}			380		pF
Reverse Transfer Capacitance	C_{rss}			240		pF

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=10V, V_{DS}=15V,$ $I_D=20A$		80		nC
Total Gate Charge	$Q_{g(4.5V)}$			35		
Gate Source Charge	Q_{gs}			13		
Gate Drain Charge	Q_{gd}			13		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=15V \quad I_D=1A$ $R_{GEN}=6\Omega \quad V_{GS}=10V$		25.7	50	ns
Turn-On Rise Time	t_r			10	20	ns
Turn-Off Delay Time	$t_{d(off)}$			128	200	ns
Turn-Off Fall Time	t_f			34	70	ns

Electrical Characteristic Curve

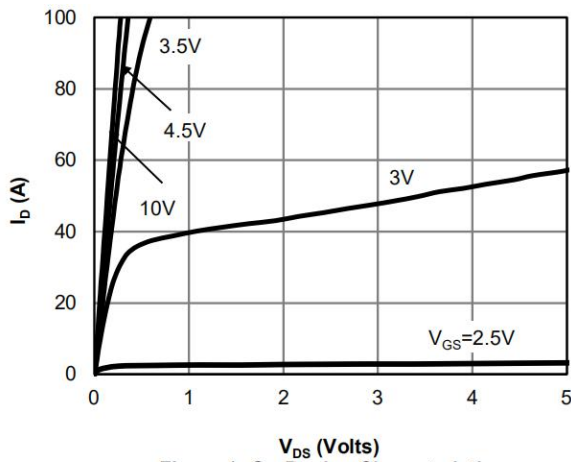


Figure 1: On-Region Characteristics

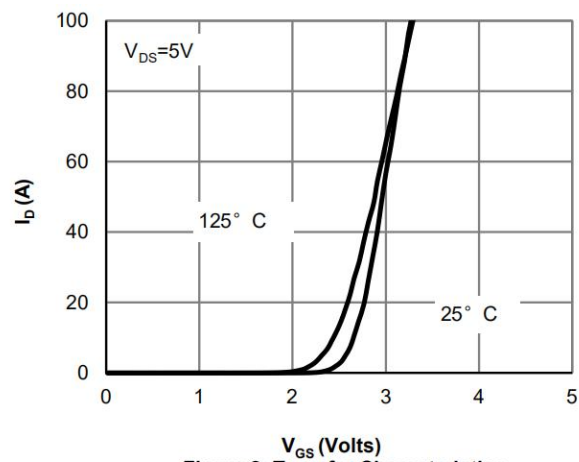


Figure 2: Transfer Characteristics

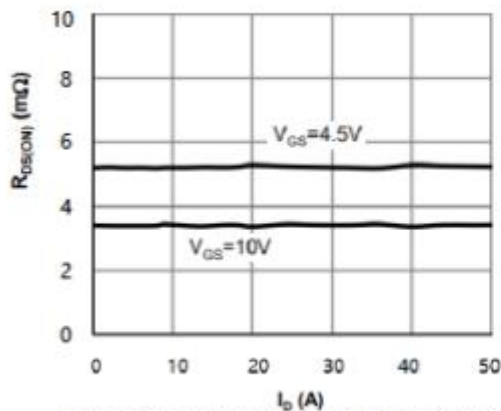


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

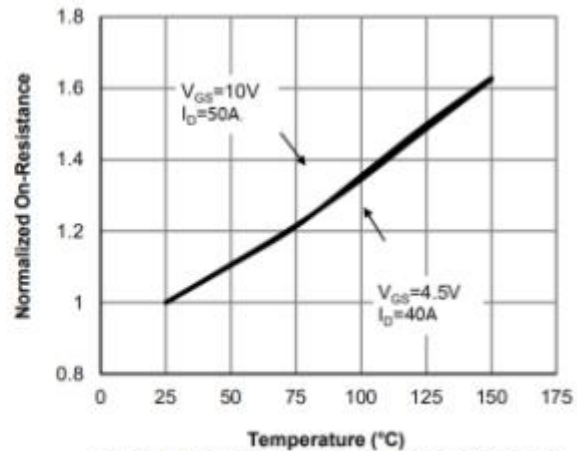


Figure 4: On-Resistance vs. Junction Temperature

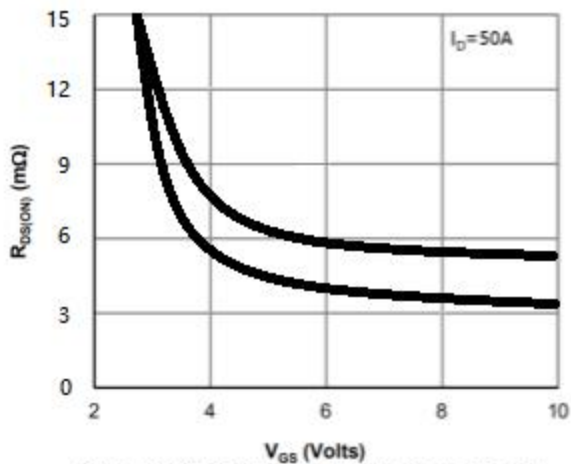


Figure 5: On-Resistance vs. Gate-Source Voltage

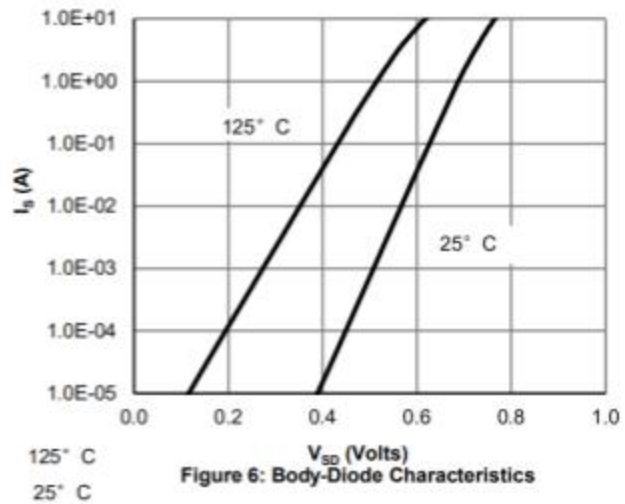


Figure 6: Body-Diode Characteristics

Electrical Characteristic Curve

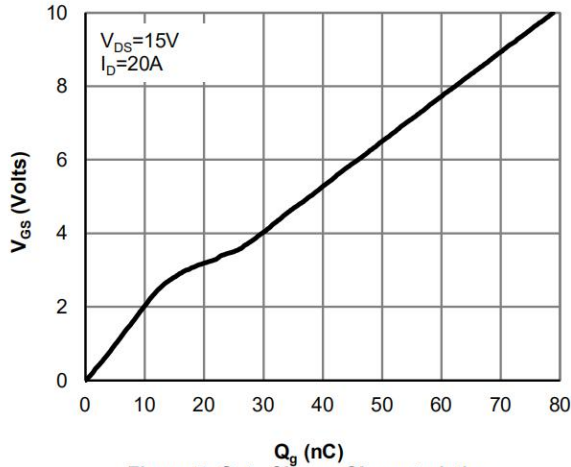


Figure 7: Gate-Charge Characteristics

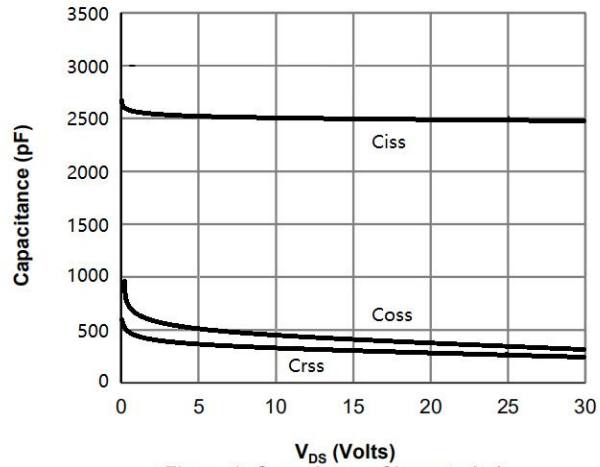


Figure 8: Capacitance Characteristics

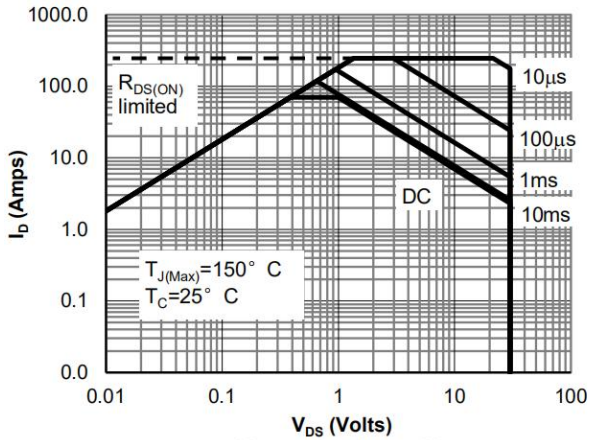


Figure 9: Maximum Forward Biased Safe Operating Area

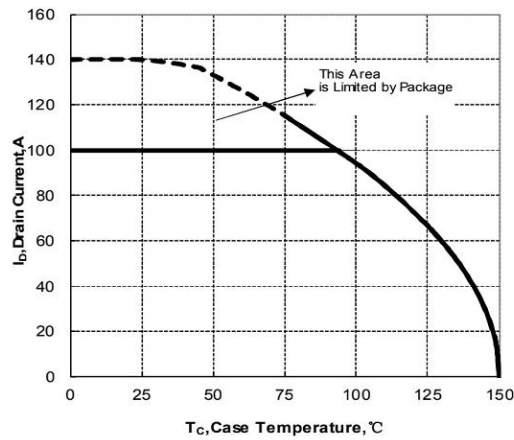


Figure 10: Maximum Continuous Drain Current vs Case Temperature

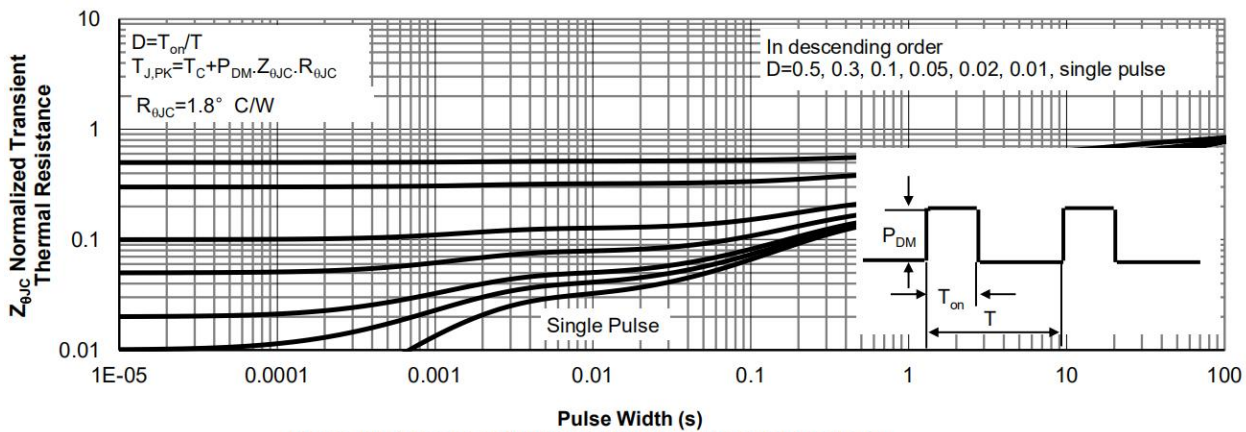
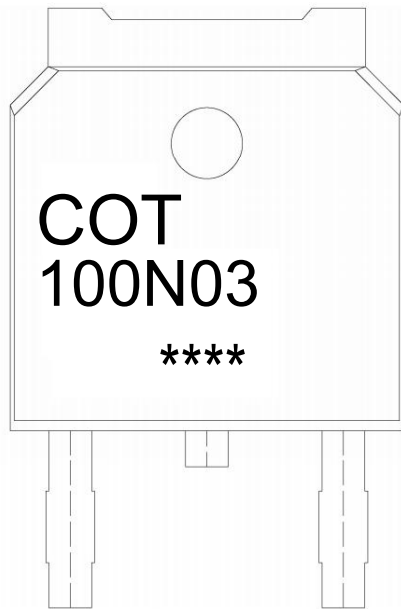


Figure 11: Normalized Maximum Transient Thermal Impedance

Marking Instructions



Note:

COT: Company Code.

100N03: Product Type.

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

Packaging SPEC.

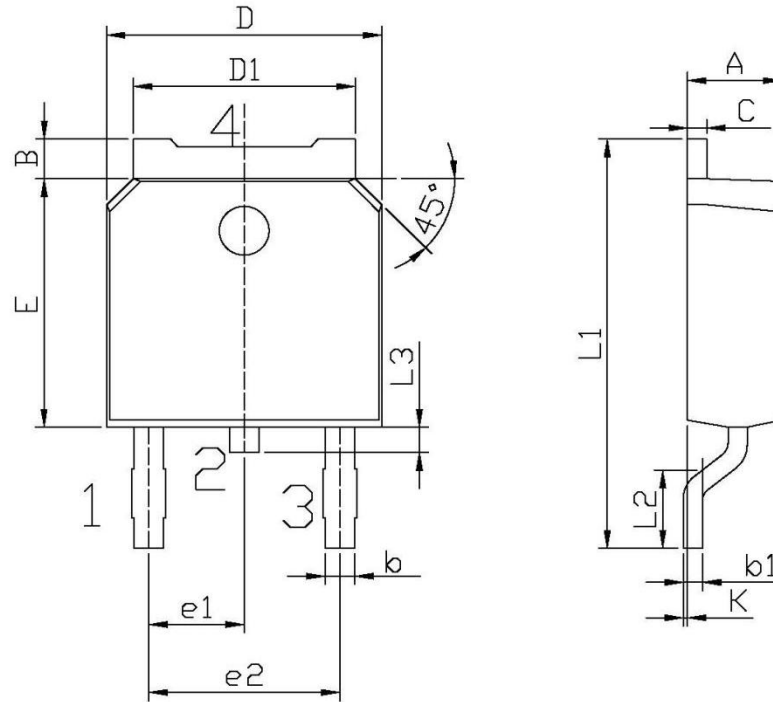
REEL INFORMATION

Package Type	Units					Dimension (unit: mm ³)		
	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: mm ³)		
	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