





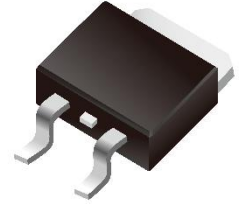
SPECIFICATION SHEET NO.	T0116- MDD30P04D000SD	
ORIGINAL MFG/PART NO.	 MDD Diodes/MDD30P04D	
NEXTGEN PART CODE	MDD30P04D000SD	Indicate This Code For RFQ /Order
DATE	Jan. 16, 2025	
REVISION	A1	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	<p>P-Channel Enhancement Mode MOSFET, MDD30 Series, 3 pins, MDD30P04D Type, Case TO-252</p> <p>Drain-Source Voltage (V_{DS}): -40V</p> <p>Continuous Drain Current (I_D): -30A Max.</p> <p>Power Dissipation (P_D): 2.5W Max.</p> <p>Junction Temperature (T_J): -55~+150° C</p> <p>Package in Tape/reel, 2500pcs/Reel</p> <p>REACH/RoHS III/Compliant and Halogen Free (HF)</p>	
CUSTOMER		
CUSTOMER PART NUMBER		
CROSS REF. PART NUMBER		
MEMO		

VENDOR APPROVE			
Issued/Checked/Approved			
Effective Date: Jan. 16, 2025			

CUSTOMER APPROVE	
Date:	

MAIN FEATURE

- Max RDS(on) = 18mΩ at VGS = -10 V, ID = -12 A
- Extremely Low Reverse Recovery Charge, Qg
- 100% UIS Tested
- REACH/RoHS/RoHS III/Compliant
- Halogen Free



*Image shown is a representation only.
Exact specifications should be obtained
from the product dimension.*

APPLICATION

- Power Management in Telecom., Industrial Automation
- Motor Drives and Uninterruptible Power Supplies
- Current Switching in DC/DC&AC/DC(SR) Sub-systems



ELECTRICAL CHARACTERISTICS

- See Page 6 ~Page 8.
- All Parameters are Subject To NextGen Components' Final Confirmation

HOW TO ORDER

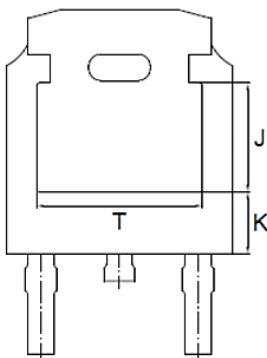
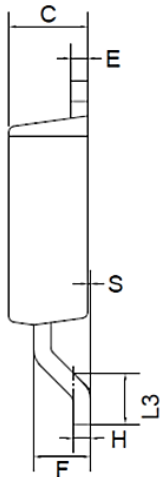
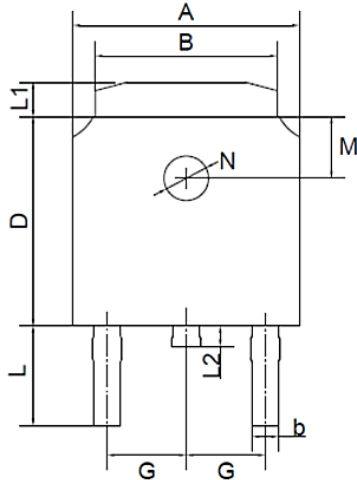
- Please Follow Up Part Code Guide And Indicate NextGen Part Code MDD30P04D000SD For RFQ and Order.

PART CODE GUIDE

RFQ
Request For Quotation

CODE	NAME	KEY SPECIFICATION OPTION
MDD30	Product Series Code	MOSFET, Continuous Drain Current (Id): -30A Max. MDD30 series, 3 pins
P	Enhancement Mode code	P: P-Channel Enhancement Mode
04	Drain-Source Voltage Code	04: -40V
D	Case Code	D: Case TO-252
000SD	Internal Control Code	Letter or Digits (A~Z, a~z or 1~9)
XX	Special/Custom Parameters Code	Letter or Digits (A~Z, a~z or 1~9) for Special Parametric; Blank: N/A

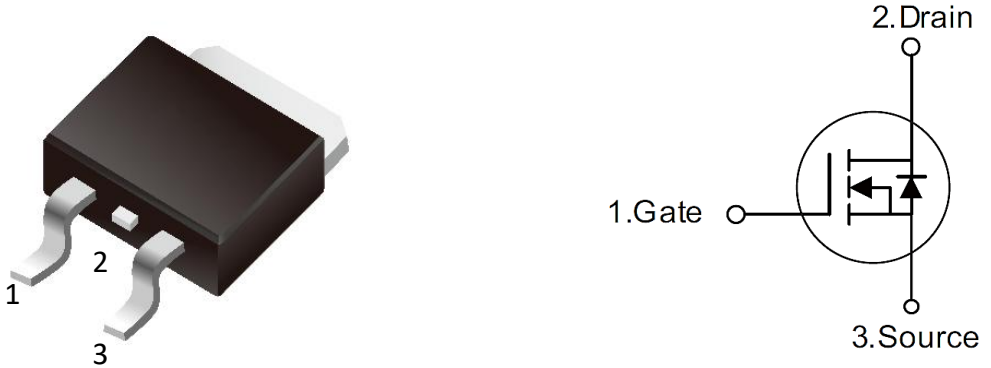
DIMENSION- Unit: mm, Case TO-252 Outline



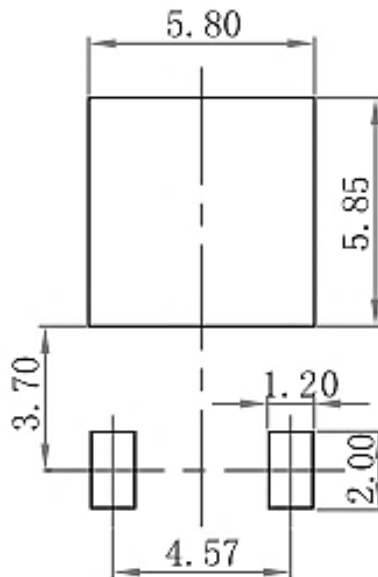
SYMBOL	VALUE (MM)		
	MIN.	TYP.	MAX.
A	6.30	-	6.70
B	5.10	-	5.50
b	0.30	-	0.80
C	2.10	-	2.50
D	5.90	-	6.30
E	0.40	-	0.60
F	1.30	-	1.80
G	2.29 Typical		
H	0.45	-	0.55
L	2.70	-	3.10
L1	0.80	-	1.20
L2	0.60	-	1.00
L3	1.40	-	1.75
S	0.0	-	0.10
M	1.80 Typical		
N	1.30 ref.		
J	3.16 ref.		
K	1.80 ref.		
T	4.83 ref.		

EQUIVALENT CIRCUIT

1. Gate (G) 2. Drain (D) 3. Source (S)



RECOMMEND PAD LAYOUT - - For Reference, Unit: Inch/mm, $\pm 0.05\text{mm}$



-40V P-CHANNEL ENHANCEMENT MODE MOSFET

V (BR)DSS	RDS (on), Max	ID	MARKING	PACKAGE/ CASE
-40V	18mΩ @ VGS=-10V	ID=-12A	MDD 30P04D XXY: Date code	TO-252
	26mΩ @ VGS=-4.5V	ID=-8A		

ABSOLUTE MAXIMUM RATINGS @Ta=25 °C (Unless Otherwise Specified)

PARAMETER	SYMBOLS	VALUE	UNIT
Drain-Source Voltage	V DS	-40	V
Gate-Source Voltage	V GS	±20	V
Continuous Drain Current (Note 1)	I D	-30	A
Single Pulsed Avalanche Energy (Note 3)	E AS	50	mJ
Power Dissipation	P D	2.5	W
Thermal Resistance from steady-state	R θJA	40	°C/W
Junction Temperature	T J	-55 ~ +150	°C
Storage Temperature Range	T STG	-55 ~ +150	°C

Note:

- 1) Calculated continuous current based on maximum allowable junction temperature.
- 2) Repetitive rating, pulse width limited by max. junction temperature.
- 3) EAS condition: TJ=25° C, VDD=-35V, VGS=-10V, L= 0.5mH, Rg= 25Ω, IAS=-14.5A.

MOSFET STATIC CHARACTERISTICS -@Ta=25 °C (Unless Otherwise Specified)

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-40	-	-	V
Gates-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V$	-	-	± 100	nA
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-40V, V_{GS}=0V$	-	-	-1	μA
Gates Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.5	-2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-12A$	-	15	18	m Ω
		$V_{GS}=-4.5V, I_D=-8A$	-	-18.5	26	

DYNAMIC ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Input Capacitance	C_{iss}	$V_{DS}=-20V,$ $V_{GS}=0V$ $f=1MHz$	-	2260	-	pF
Output Capacitance	C_{oss}		-	154	-	pF
Reverse Transfer Capacitance	C_{rss}		-	132	-	pF
Total Gate Charge	Q_g	$V_{DS}=-20V,$ $V_{GS}=-10V,$ $I_D=-10A$	-	17	-	nC
Gate Source Charge	Q_{gs}		-	4.5	-	nC
Gate Drain Charge	Q_{gd}		-	4	-	nC

SWITCHING CHARACTERISTICS

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Turn on Delay Time	$t_{d(on)}$	$V_{DD}=-20V,$ $V_{GS}=-10V,$ $I_D=-10A,$ $R_G=3\Omega$	-	7	-	ns
Turn on Rise Time	t_r		-	24	-	ns
Turn Off Delay Time	$t_{d(off)}$		-	20	-	ns
Turn Off Fall Time	t_f		-	18	-	ns

SOURCE DRAIN DIODE CHARACTERISTICS

PARAMETER	SYMBOL	CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Drain-Source Diode Forward Voltage	V_{SD}	$I_S=-20A, V_{GS}=0V$	-	-0.8	-1.2	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F=-10A, V_{GS}=0V,$ $dI/dt=100A/\mu s$	-	19	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	9	-	nC

TYPICAL PERFORMANCE - For Reference Only

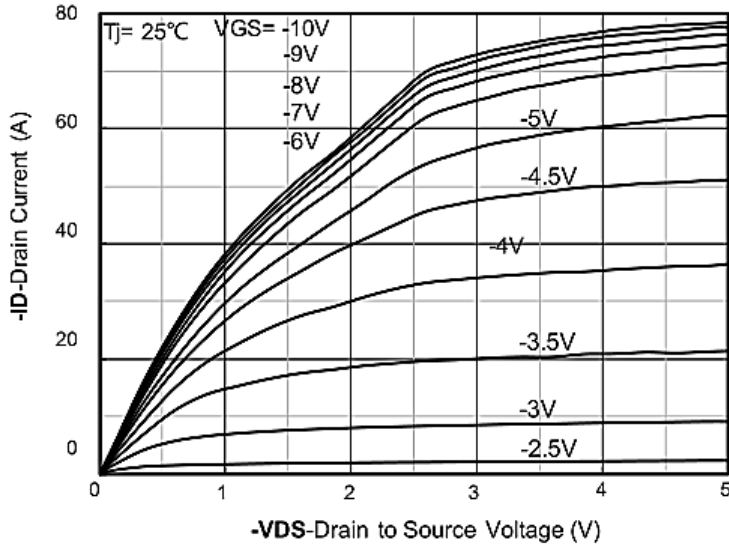


Figure 1. Typ. output characteristics

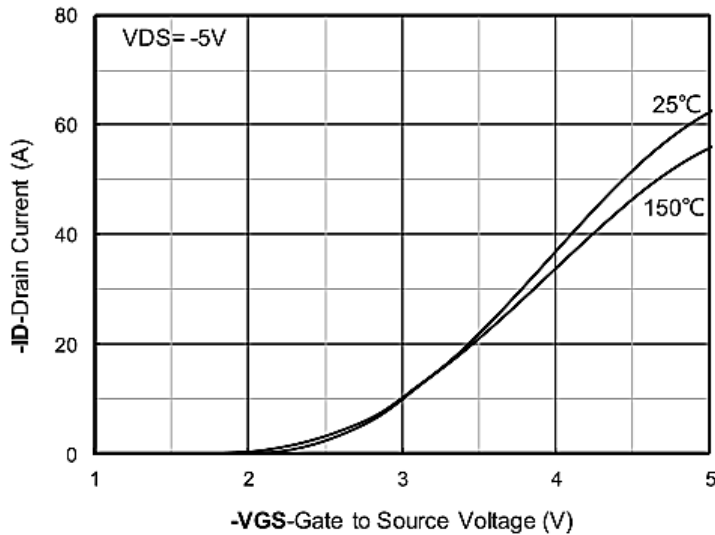


Figure 2. Typ. transfer characteristics

TYPICAL PERFORMANCE - For Reference Only

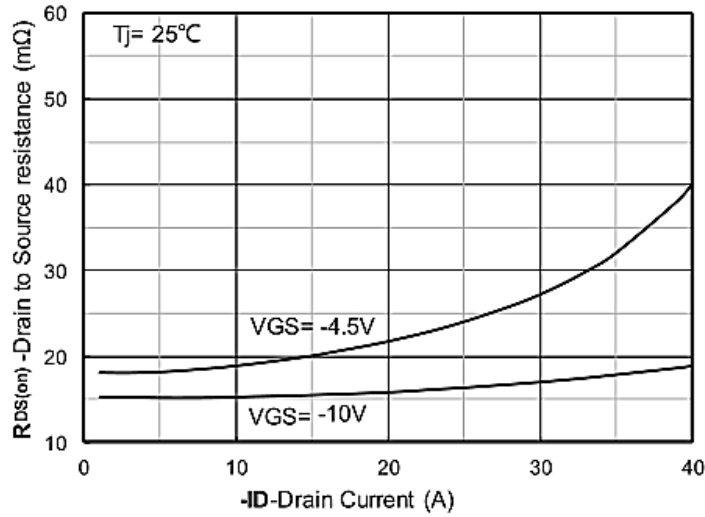


Figure 3. On-Resistance vs. Drain Current

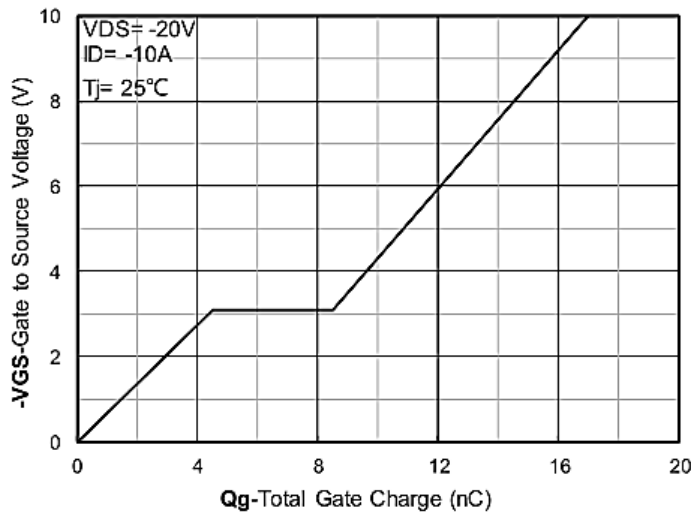


Figure 4. Gate Charge Characteristics

TYPICAL PERFORMANCE - For Reference Only

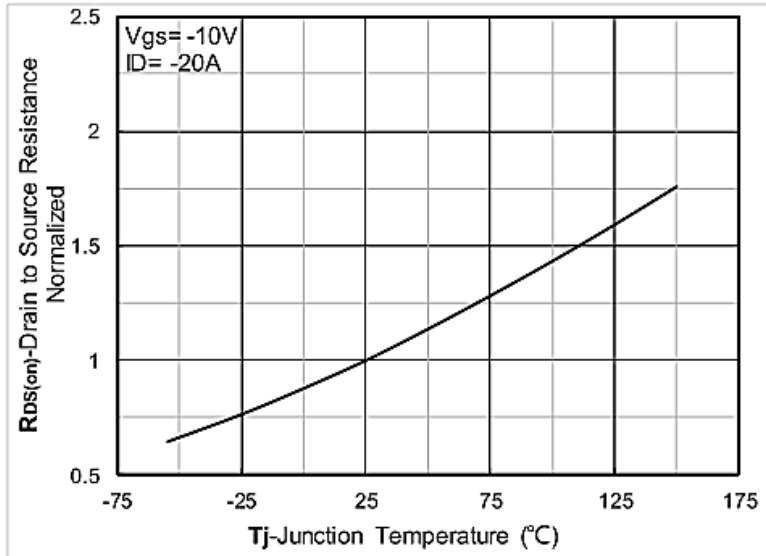


Figure 5. Normalized on Resistance vs. Junction Temperature

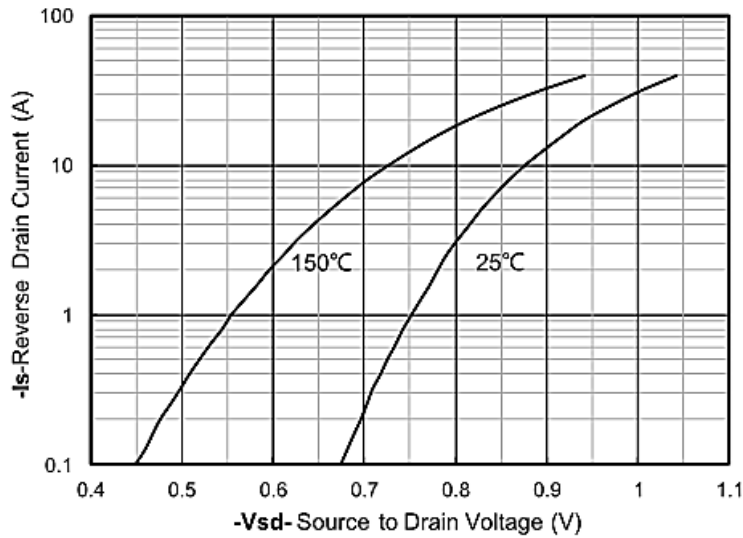
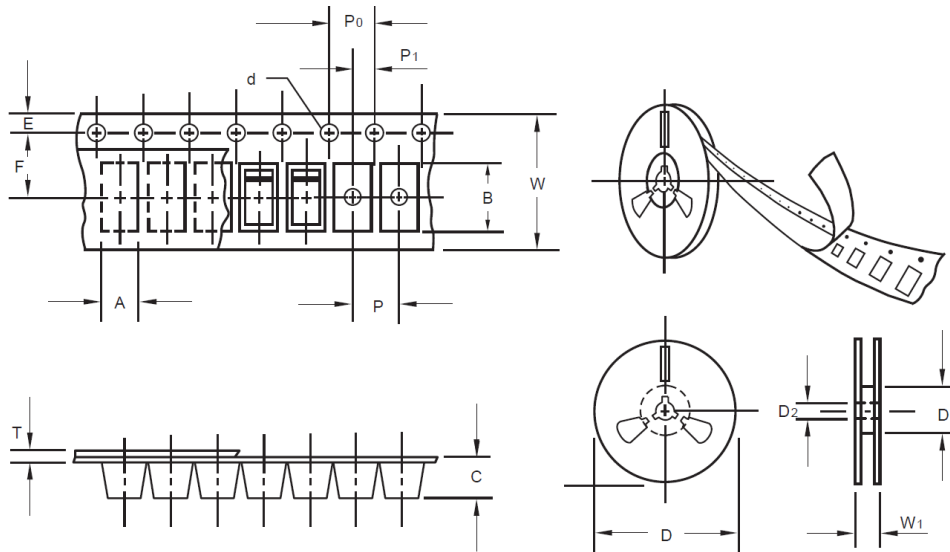


Figure 6. Forward characteristic of body diode

TAPE/REEL - Unit: mm, All Devices are packed in accordance with EIA standard RS-481-A and specifications



ITEM	SYMBOL	TOLERANCE	TO-252
Carrier width	A	0.1	6.15
Carrier Length	B	0.1	8.41
Carrier Depth	C	0.1	2.42
Sprocket hole	d	0.05	1.50
13" Reel outside diameter	D	2.0	330.00
13" Reel inner diameter	D1	Min.	50.00
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	7.50
Punch hole pitch	P	0.1	8.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.25
Tape width	W	0.3	16.00
Reel width	W1	1.0	16.50
SPQ Per Reel	2500pcs		

IMPORTANT NOTES AND DISCLAIMER

1. **ROHS COMPLIANCE:** The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU RoHS Directive (EU) 2015/863 EC (RoHS3). RoHS Test Report for this product can be obtained at Download Center.
2. **REACH COMPLIANCE:** REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, REACH Test Report for this product can be obtained at Download Center.
3. All Product parametric performance is indicated in the Electrical Characteristics for the listed herein test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
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