

**COMMON SOURCE DUAL N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR**

NEW PRODUCT

**Features**

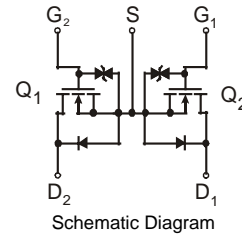
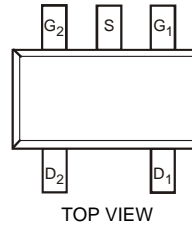
- Common Source Dual N-Channel MOSFET
- Low On-Resistance
- Very Low Gate Threshold Voltage, 1.2V max
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Small Surface Mount Package
- ESD Protected Gate
- **Lead Free By Design/RoHS Compliant (Note 2)**
- **"Green" Device (Note 3)**
- **Qualified to AEC-Q 101 Standards for High Reliability**

**Mechanical Data**

- Case: SOT-353
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Finish – Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.006 grams (approximate)



SOT-353



**Maximum Ratings**  $Q_1, Q_2$  @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Value	Unit
Drain Source Voltage	$V_{DSS}$	30	V
Gate-Source Voltage	$V_{GSS}$	$\pm 10$	V
Drain Current (Note 1)	$I_D$	400	mA

**Thermal Characteristics**  $Q_1, Q_2$  @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Total Power Dissipation (Note 1)	$P_D$	280	mW
Thermal Resistance, Junction to Ambient (Note 1)	$R_{\theta JA}$	446	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_j, T_{STG}$	-55 to +150	$^\circ\text{C}$

**Electrical Characteristics**  $Q_1, Q_2$  @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 4)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	30	—	—	V	$V_{GS} = 0V, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current @ $T_C = 25^\circ\text{C}$	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 30V, V_{GS} = 0V$
Gate-Body Leakage	$I_{GSS}$	—	—	$\pm 10$ $\pm 1$	$\mu\text{A}$	$V_{GS} = \pm 10V, V_{DS} = 0V$ $V_{GS} = \pm 5V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 4)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	0.6	—	1.2	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	—	2.2 1.5 1.2	$\Omega$	$V_{GS} = 1.8V, I_D = 20\text{mA}$ $V_{GS} = 2.5V, I_D = 20\text{mA}$ $V_{GS} = 4.0V, I_D = 100\text{mA}$
Forward Transconductance	$ Y_{fs} $	100	—	—	mS	$V_{DS} = 10V, I_D = 0.1\text{A}$
Source-Drain Diode Forward Voltage	$V_{SD}$	0.5	—	1.4	V	$V_{GS} = 0V, I_S = 115\text{mA}$
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{iss}$	—	39	—	pF	$V_{DS} = 3V, V_{GS} = 0V$ $f = 1.0\text{MHz}$
Output Capacitance	$C_{oss}$	—	10	—	pF	
Reverse Transfer Capacitance	$C_{rss}$	—	3.6	—	pF	
Switching Time	Turn-on Time	$t_{on}$	—	11	nS	$V_{DD} = 5V, I_D = 10\text{mA},$ $V_{GS} = 0-5V$
	Turn-off Time	$t_{off}$	—	51	nS	

- Notes:
1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
  2. No purposefully added lead.
  3. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).
  4. Short duration pulse test used to minimize self-heating effect.

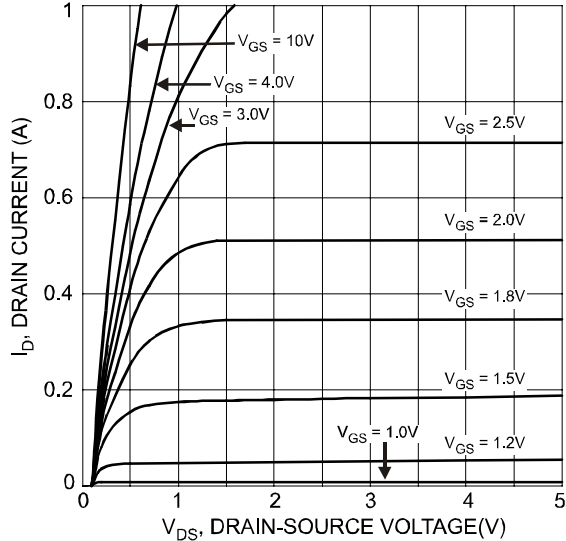


Fig. 1 Typical Output Characteristics

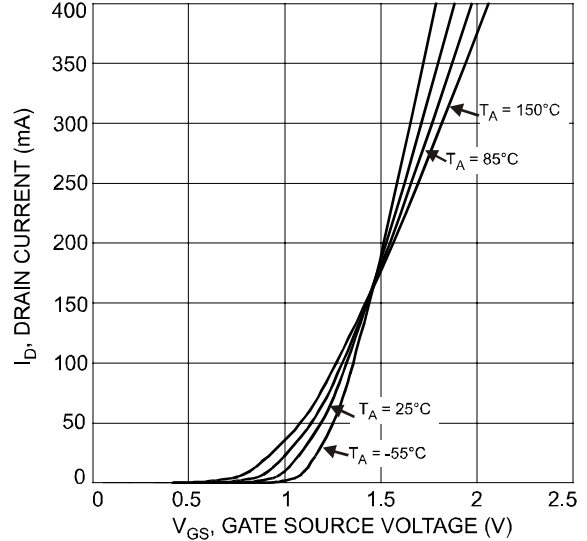


Fig. 2 Typical Transfer Characteristics

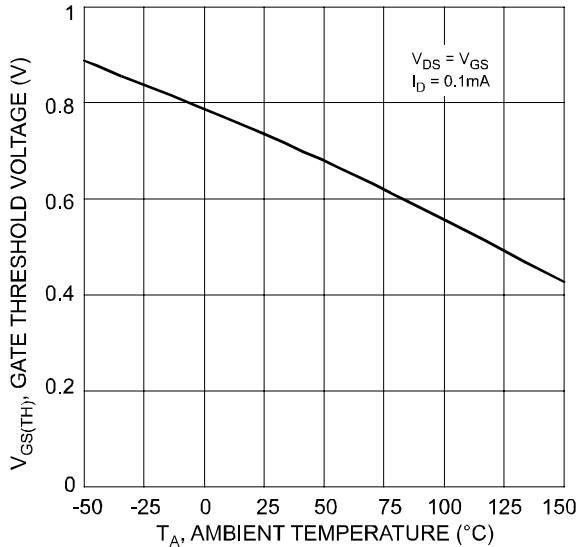


Fig. 3 Gate Threshold Voltage vs. Ambient Temperature

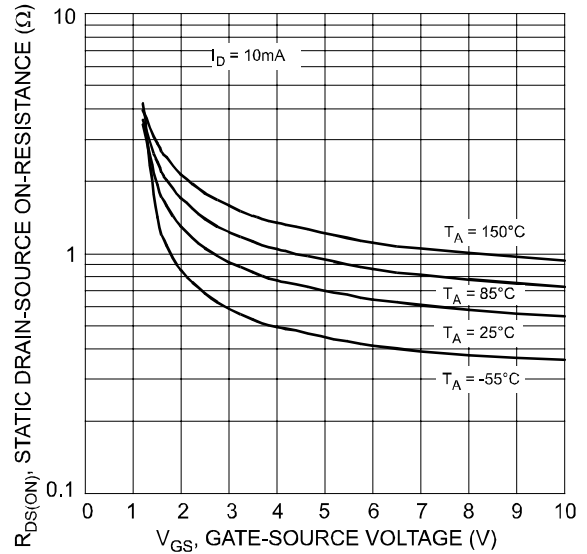


Fig. 4 Static Drain-Source On-Resistance vs. Gate-Source Voltage

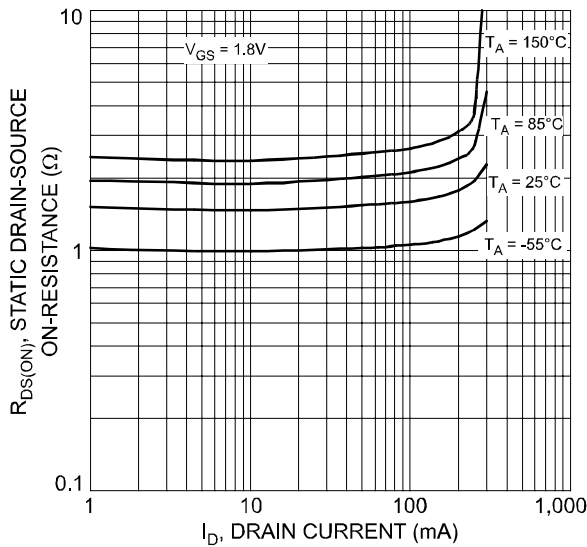


Fig. 5 Static Drain-Source On-Resistance vs. Drain Current

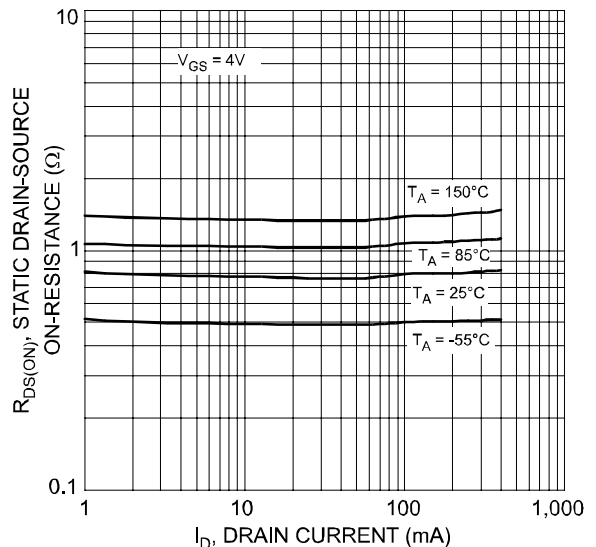


Fig. 6 Static Drain-Source On-Resistance vs. Drain Current

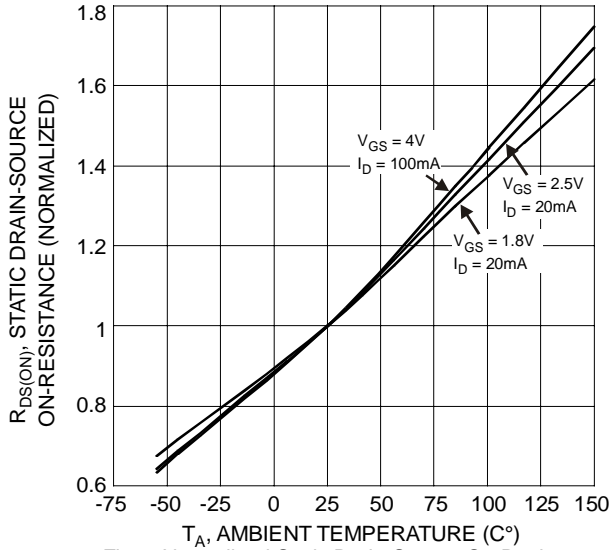


Fig. 7 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

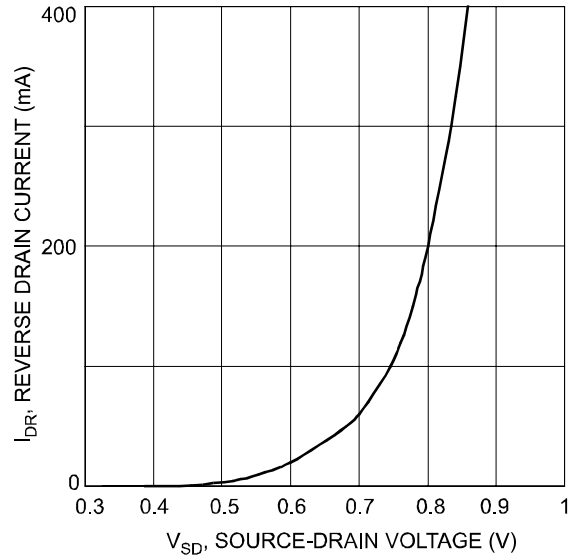


Fig. 8 Reverse Drain Current vs. Source-Drain Voltage

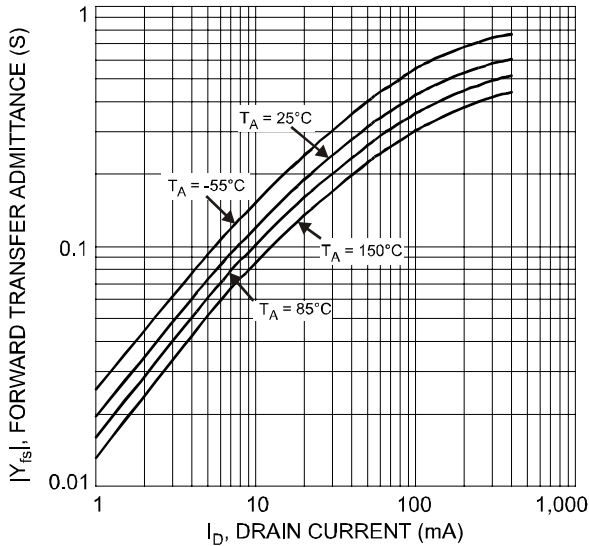


Fig. 9 Forward Transfer Admittance vs. Drain Current

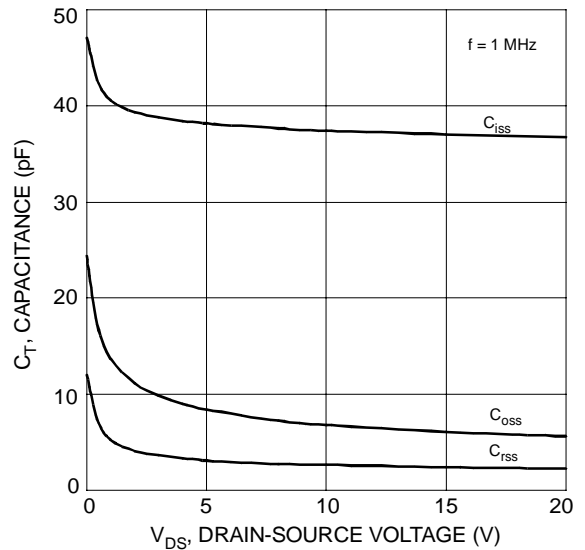


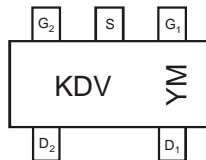
Fig. 10 Typical Capacitance

**Ordering Information** (Note 5)

Part Number	Case	Packaging
DMN32D2LDF-7	SOT-353	3000/Tape & Reel

Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information** (Note 6)



KDV = Product Type Marking Code (See Note 6)  
 YM = Date Code Marking  
 Y = Year ex: U = 2007  
 M = Month ex: 9 = September

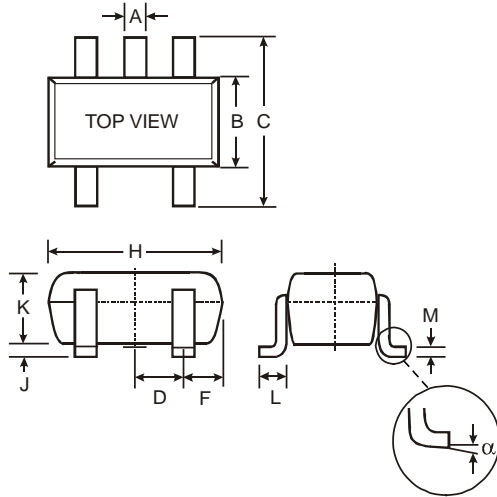
Notes: 6. Package is non-polarized. Parts may be on reel in orientation illustrated, 180° rotated, or mixed (both ways).

**Date Code Key**

Year	2007	2008	2009	2010	2011	2012
Code	U	V	W	X	Y	Z

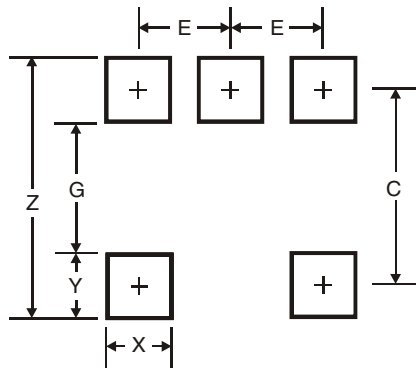
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

**Package Outline Dimensions**



SOT-353		
Dim	Min	Max
A	0.10	0.30
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
F	0.30	0.40
H	1.80	2.20
J	—	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.25
α	0°	8°
All Dimensions in mm		

**Suggested Pad Layout**



Dimensions	Value (in mm)
Z	2.5
G	1.3
X	0.42
Y	0.6
C	1.9
E	0.65

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