SPECIFICATIONS (T_J = 25 °C, unless otherwise noted)						
PARAMETER	**SYMBOL**	**TEST CONDITIONS**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Static						
Drain-Source Breakdown Voltage	V_{DS}	V_{GS} = 0 V, I_D = -250 µA	-20	-	-	V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	I_D = -250 µA	-	-12	-	mV/°C
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}/T_J$		-	2.5	-	
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250 µA	-0.4	-	-1	V
Gate-Source Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 8 V	-	-	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -20 V, V_{GS} = 0 V	-	-	-1	µA
		V_{DS} = -20 V, V_{GS} = 0 V, T_J = 70 °C	-	-	-10	
On-State Drain Current [a]	$I_{D(on)}$	$V_{DS} \leq$ -5 V, V_{GS} = -4.5 V	-10	-	-	A
Drain-Source On-State Resistance [a]	$R_{DS(on)}$	V_{GS} = -4.5 V, I_D = -1.5 A	-	0.083	0.100	Ω
		V_{GS} = -2.5 V, I_D = -1.5 A	-	0.098	0.118	
		V_{GS} = -1.8 V, I_D = -1 A	-	0.115	0.140	
		V_{GS} = -1.5 V, I_D = -0.5 A	-	0.136	0.205	
Forward Transconductance [a]	g_{fs}	V_{DS} = -10 V, I_D = -1 A	-	7	-	S
Dynamic [b]						
Input Capacitance	C_{iss}	V_{DS} = -10 V, V_{GS} = 0 V, f = 1 MHz	-	610	-	pF
Output Capacitance	C_{oss}		-	120	-	
Reverse Transfer Capacitance	C_{rss}		-	95	-	
Total Gate Charge	Q_g	V_{DS} = -10 V, V_{GS} = -8 V, I_D = 1 A	-	16	24	nC
		V_{DS} = -10 V, V_{GS} = -4.5 V, I_D = 1 A	-	9.5	15	
Gate-Source Charge	Q_{gs}		-	0.9	-	
Gate-Drain Charge	Q_{gd}		-	2.6	-	
Gate Resistance	R_g	V_{GS} = -0.1 V, f = 1 MHz	-	6.5	-	Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -10 V, R_L = 10 Ω $I_D \cong$ -1 A, V_{GEN} = -4.5 V, R_g = 1 Ω	-	15	25	ns
Rise Time	t_r		-	25	40	
Turn-Off Delay Time	$t_{d(off)}$		-	35	55	
Fall Time	t_f		-	10	15	
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -10 V, R_L = 10 Ω $I_D \cong$ -1 A, V_{GEN} = -8 V, R_g = 1 Ω	-	7	15	
Rise Time	t_r		-	12	20	
Turn-Off Delay Time	$t_{d(off)}$		-	32	50	
Fall Time	t_f		-	12	20	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	T_A = 25 °C	-	-	-1.5	A
Pulse Diode Forward Current	I_{SM}		-	-	-20	
Body Diode Voltage	V_{SD}	I_S = -1 A, V_{GS} = 0 V	-	-0.8	-1.2	V
Body Diode Reverse Recovery Time	t_{rr}	I_F = -1 A, dI/dt = 100 A/µs, T_J = 25 °C	-	15	30	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	10	20	nC
Reverse Recovery Fall Time	t_a		-	9	-	ns
Reverse Recovery Rise Time	t_b		-	6	-	

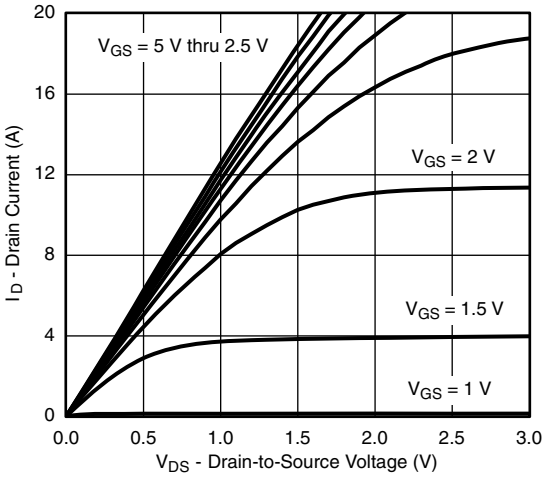
Notes

a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %.

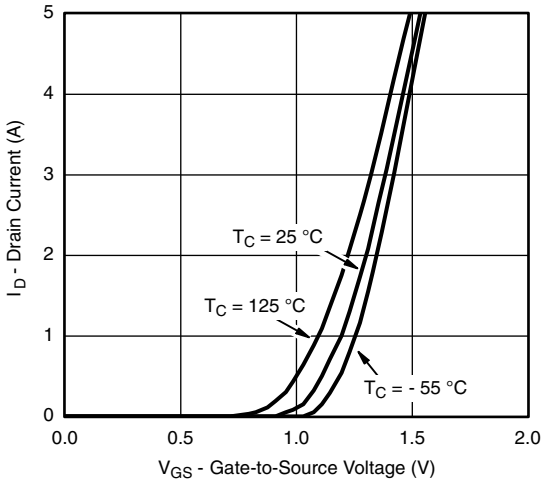
b. Guaranteed by design, not subject to production testing.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

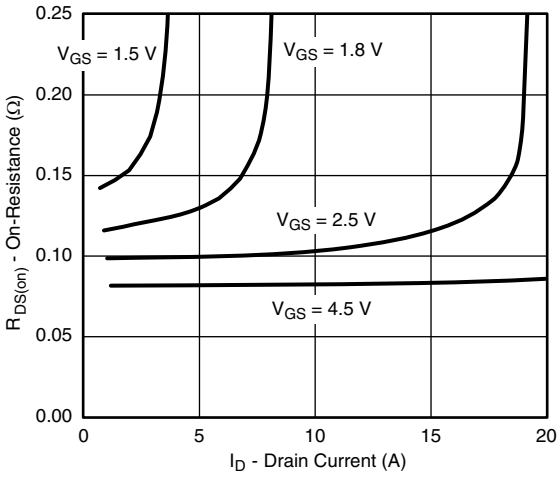
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



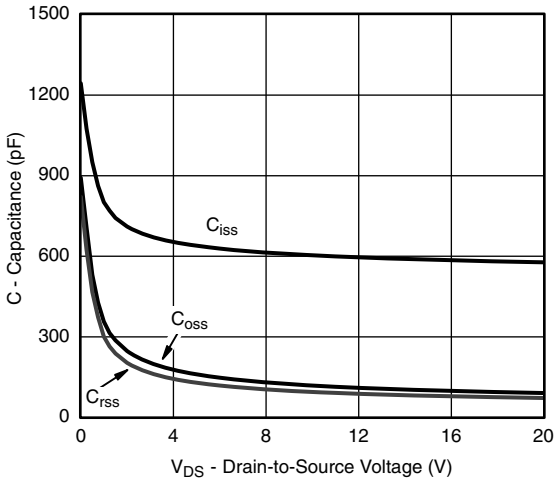
Output Characteristics



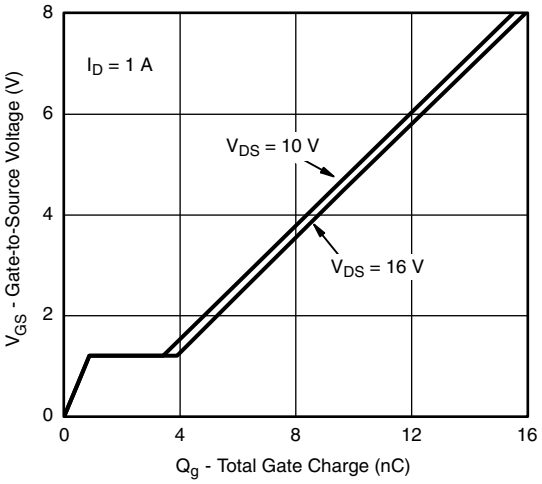
Transfer Characteristics



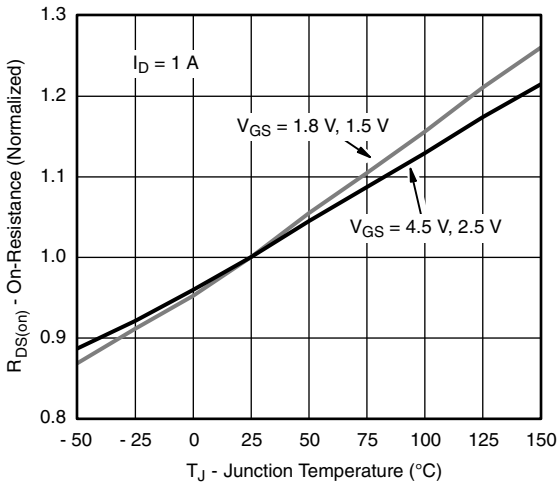
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

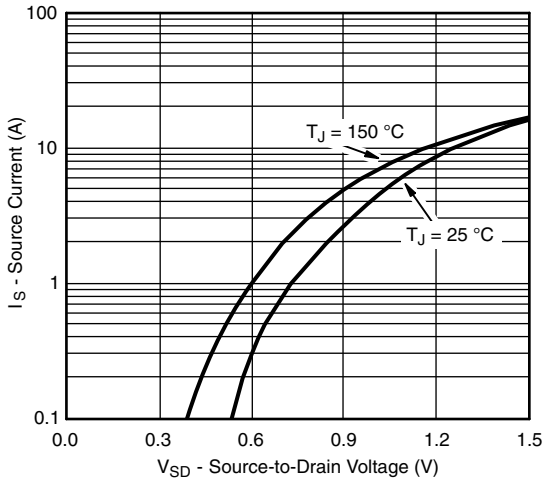


Gate Charge

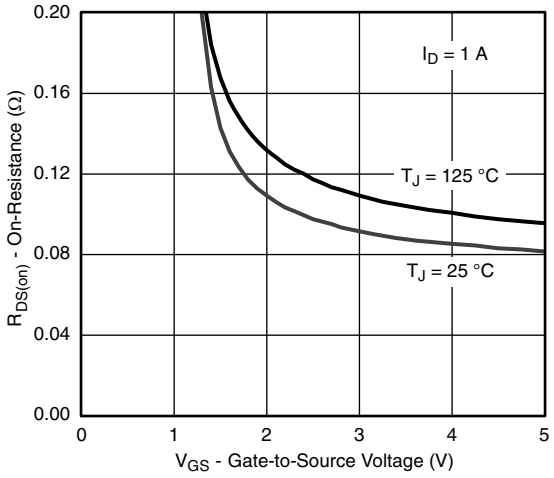


On-Resistance vs. Junction Temperature

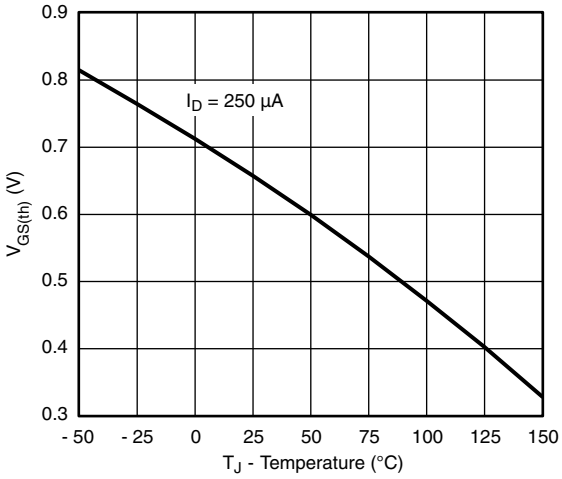
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



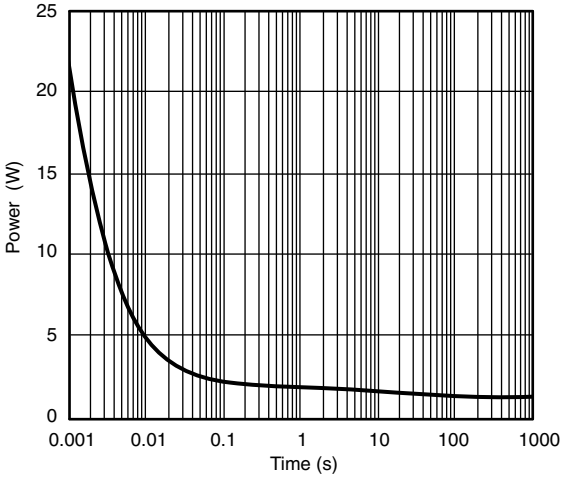
Source-Drain Diode Forward Voltage



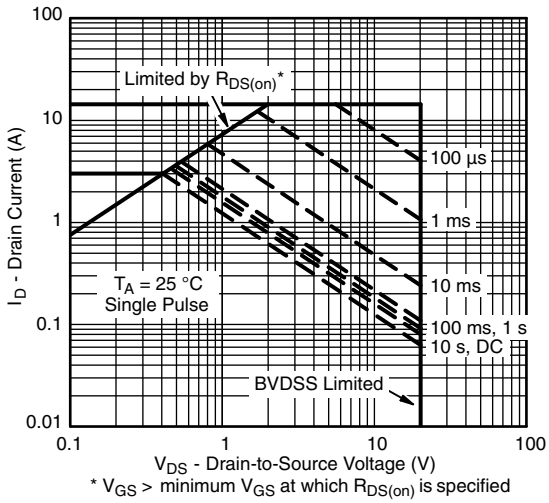
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

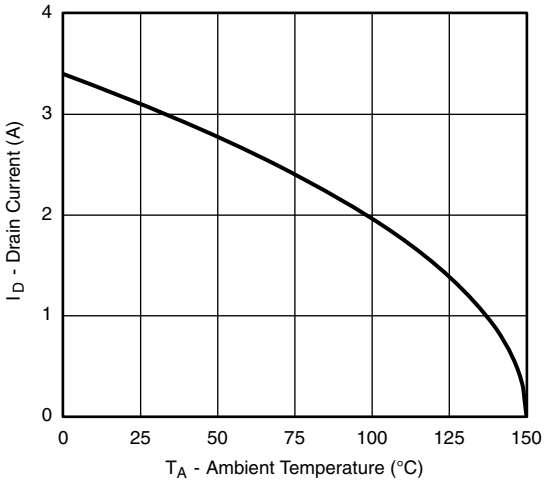


Single Pulse Power, Junction-to-Ambient

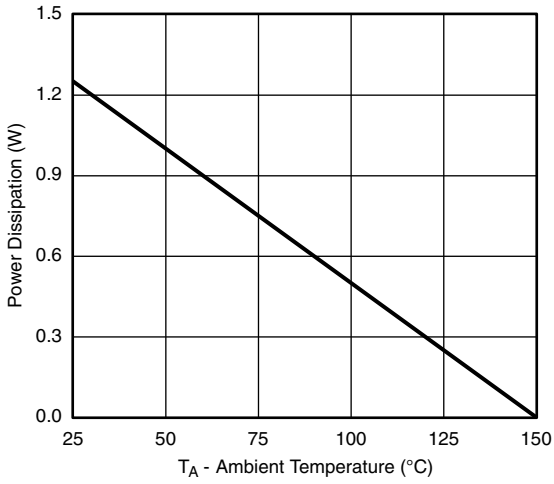


Safe Operating Area, Junction-to-Ambient

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Current Derating [a]



Power Derating

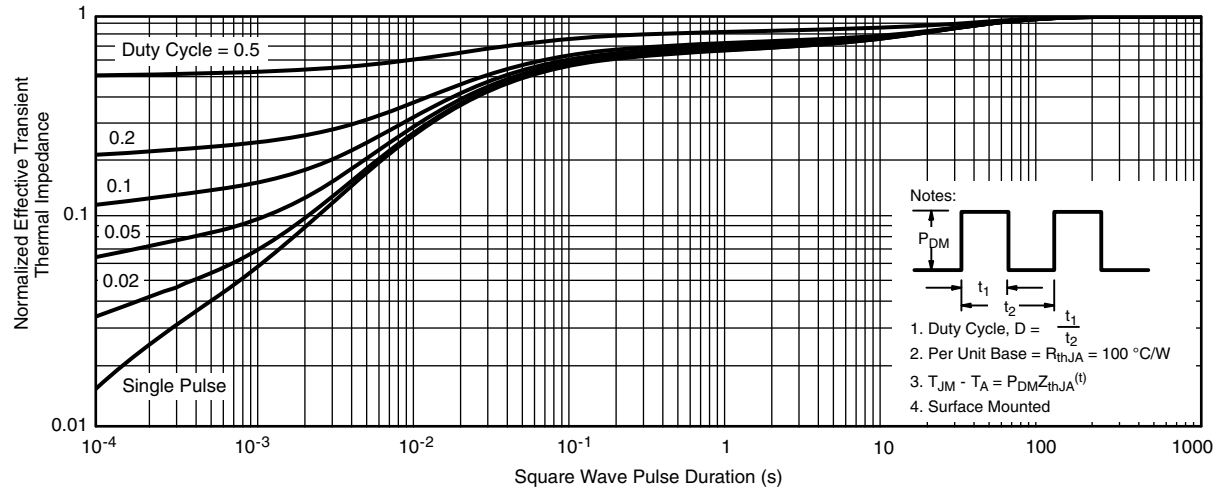
Note

- When mounted on 1" x 1" FR4 with full copper.

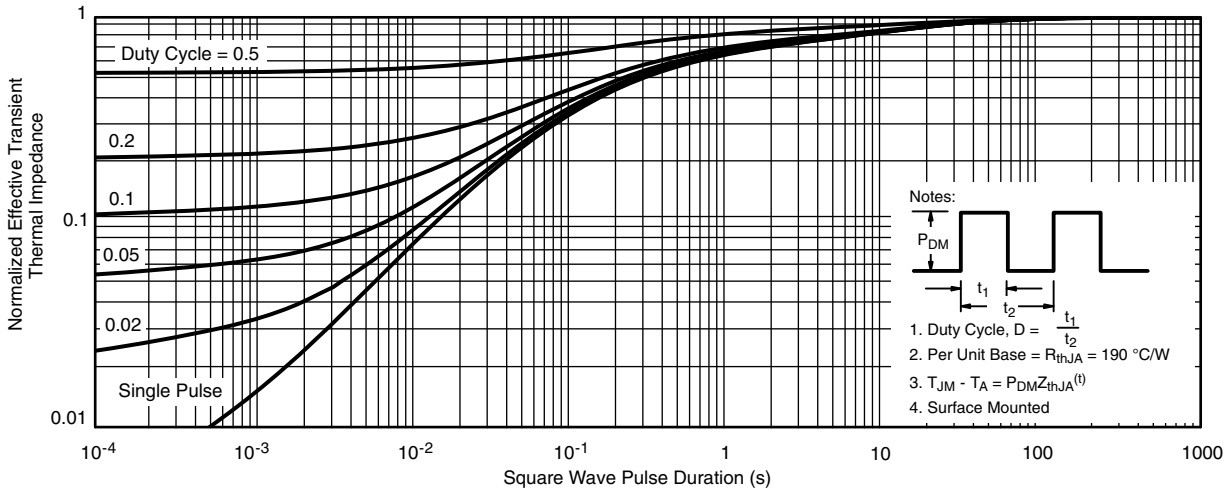
Note

a. The power dissipation P_D is based on T_J (max.) = 150 °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Ambient (1" x 1" FR4 Board with Full Copper)



Normalized Thermal Transient Impedance, Junction-to-Ambient (1" x 1" FR4 Board with Minimum Copper)

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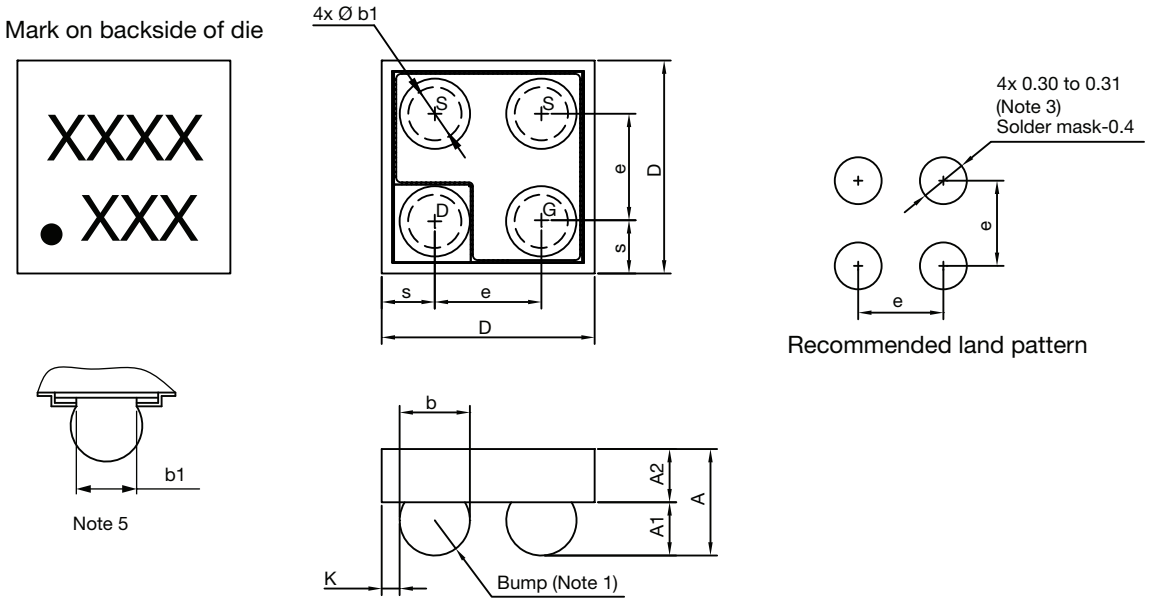
MICRO FOOT®: 4-Bumps
(1 mm x 1 mm, 0.5 mm Pitch, 0.286 mm Bump Height)



Notes

1. Bumps are 95.5/3.8/0.7 Sn/Ag/Cu.
2. Backside surface is coated with a Ti/Ni/Ag layer.
3. Non-solder mask defined copper landing pad.
4. Laser mark on the backside surface of die.
5. “b1” is the diameter of the solderable substrate surface, defined by an opening in the solder resist layer solder mask defined.
6. • is the location of pin 1

DIM.	MILLIMETERS			INCHES		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.458	0.504	0.550	0.0180	0.0198	0.0217
A1	0.214	0.250	0.286	0.0084	0.0098	0.0113
A2	0.244	0.254	0.264	0.0096	0.0100	0.0104
b	0.297	0.330	0.363	0.0117	0.0130	0.0143
b1		0.250			0.0098	
e		0.500			0.0197	
s	0.210	0.230	0.250	0.0083	0.0091	0.0096
D	0.920	0.960	1.000	0.0362	0.0378	0.0394
K	0.029	0.065	0.102	0.0011	0.0026	0.0040

Note

- Use millimeters as the primary measurement.

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DWG: 6039

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