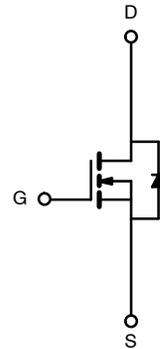
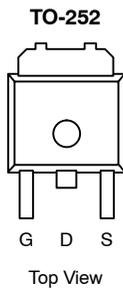


N-Channel 60-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
60	0.016 @ $V_{GS} = 10$ V	40

FEATURES

- TrenchFET® Power MOSFET
- 175°C Maximum Junction Temperature
- 100% R_g Tested



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ($T_J = 175^\circ\text{C}$) ^b	$T_C = 25^\circ\text{C}$	I_D	40	A
	$T_C = 125^\circ\text{C}$		30	
Pulsed Drain Current		I_{DM}	60	
Continuous Source Current (Diode Conduction)		I_S	40	
Avalanche Current		I_{AR}	40	
Repetitive Avalanche Energy (Duty Cycle $\leq 1\%$)	$L = 0.1$ mH	E_{AR}	80	mJ
Maximum Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	136 ^b	W
	$T_A = 25^\circ\text{C}$		3 ^a	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 175	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient ^a	$t \leq 10$ sec	R_{thJA}	15	18	$^\circ\text{C/W}$
	Steady State		40	50	
Junction-to-Case		R_{thJC}	0.85	1.1	

Notes

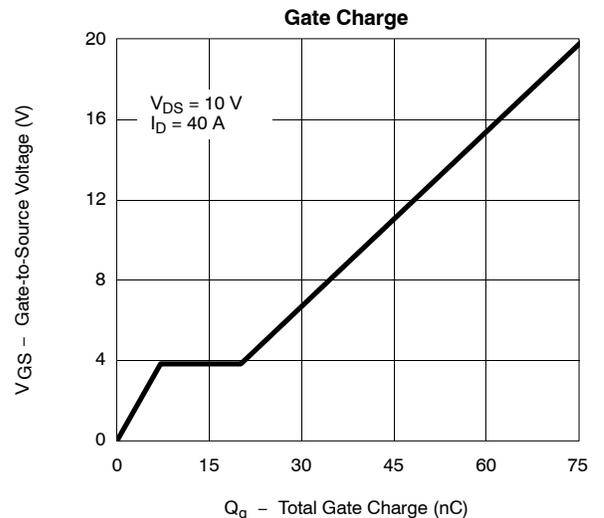
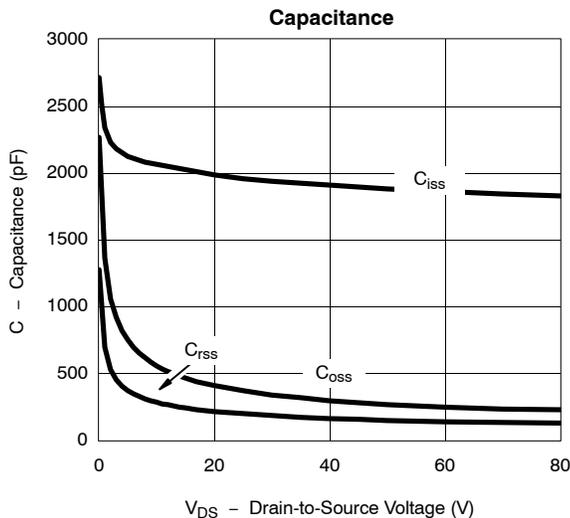
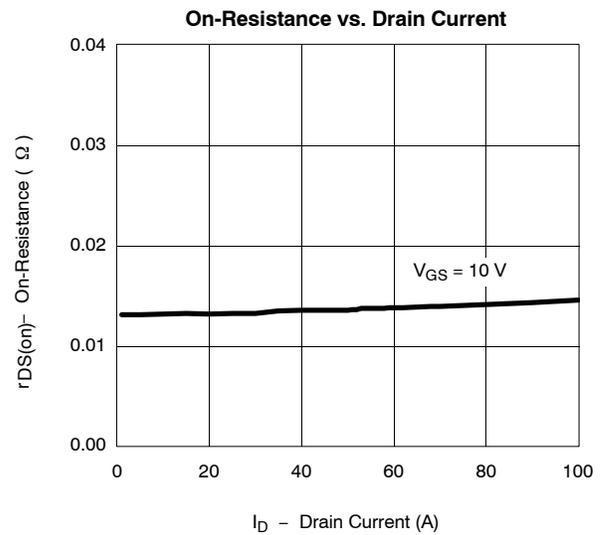
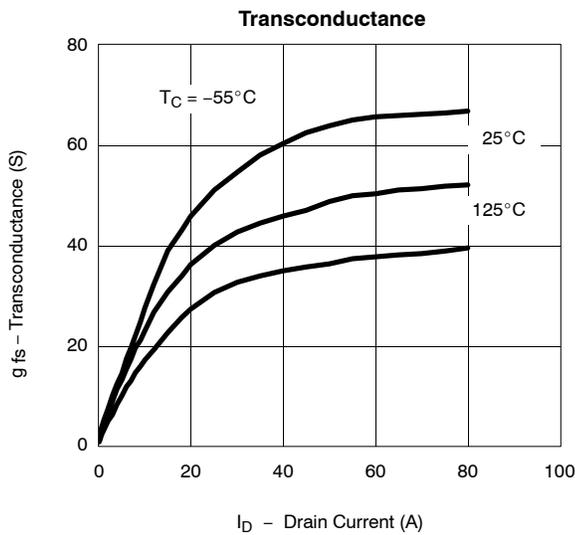
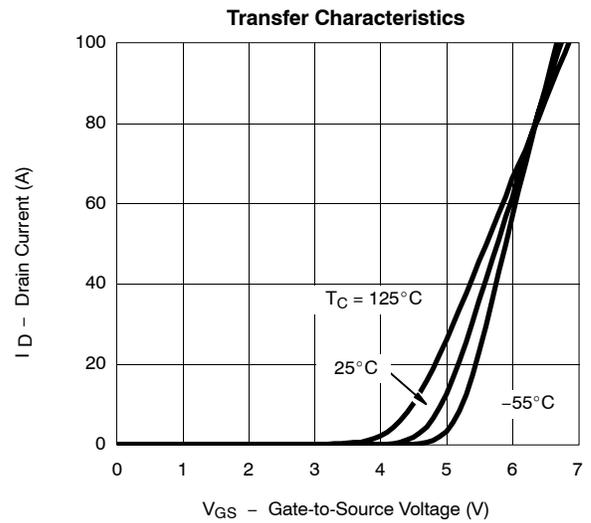
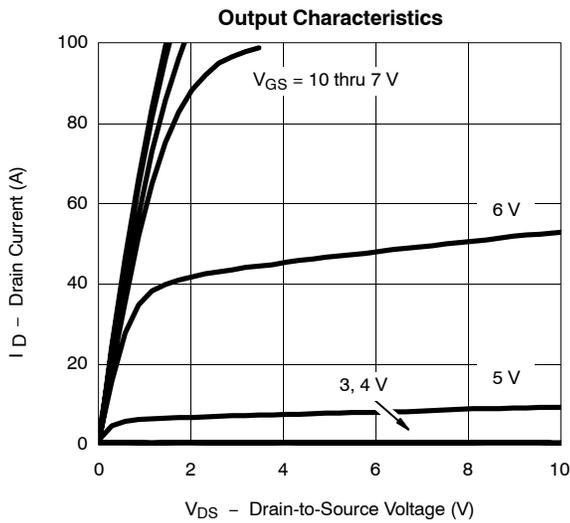
- Surface Mounted on 1" x1" FR4 Board.
- See SOA curve for voltage derating.

SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	2.0		4.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V			1	μA
		V _{DS} = 60 V, V _{GS} = 0 V, T _J = 125 °C			50	
		V _{DS} = 60 V, V _{GS} = 0 V, T _J = 175 °C			250	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	40			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 40 A		0.013	0.016	Ω
		V _{GS} = 10 V, I _D = 40 A, T _J = 125 °C			0.027	
		V _{GS} = 10 V, I _D = 40 A, T _J = 175 °C			0.037	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 40 A		45		S
Dynamic^a						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, F = 1 MHz		1960		pF
Output Capacitance	C _{oss}			370		
Reverse Transfer Capacitance	C _{rss}			200		
Total Gate Charge ^c	Q _g	V _{DS} = 40 V, V _{GS} = 10 V, I _D = 40 A		42	60	nC
Gate-Source Charge ^c	Q _{gs}			7		
Gate-Drain Charge ^c	Q _{gd}			13		
Gate Resistance	R _g		0.5		2.7	Ω
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 40 V, R _L = 1.0 Ω I _D = 40 A, V _{GEN} = 10 V, R _g = 2.5 Ω		12	20	ns
Rise Time ^c	t _r			52	80	
Turn-Off Delay Time ^c	t _{d(off)}			25	38	
Fall Time ^c	t _f			10	15	
Source-Drain Diode Ratings and Characteristic (T_C = 25 °C)						
Pulsed Current	I _{SM}				40	A
Diode Forward Voltage ^b	V _{SD}	I _F = 40 A, V _{GS} = 0 V		1.0	1.5	V
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 40 A, di/dt = 100 A/μs		45	70	ns

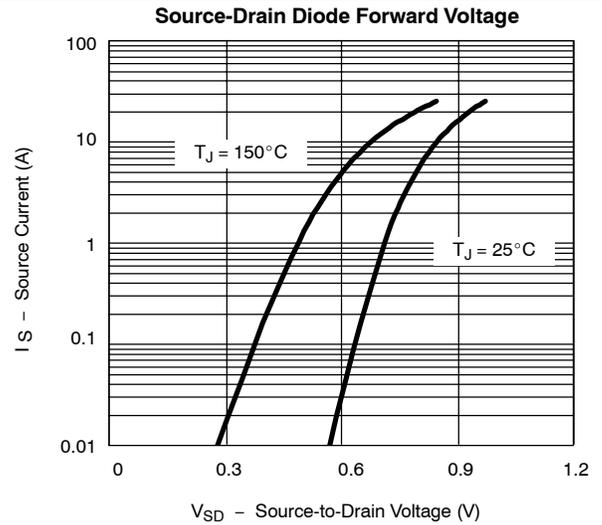
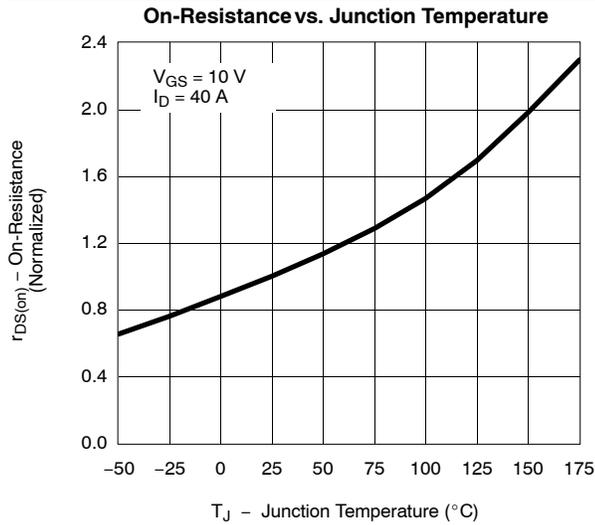
Notes

- a. Guaranteed by design, not subject to production testing.
- b. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- c. Independent of operating temperature.

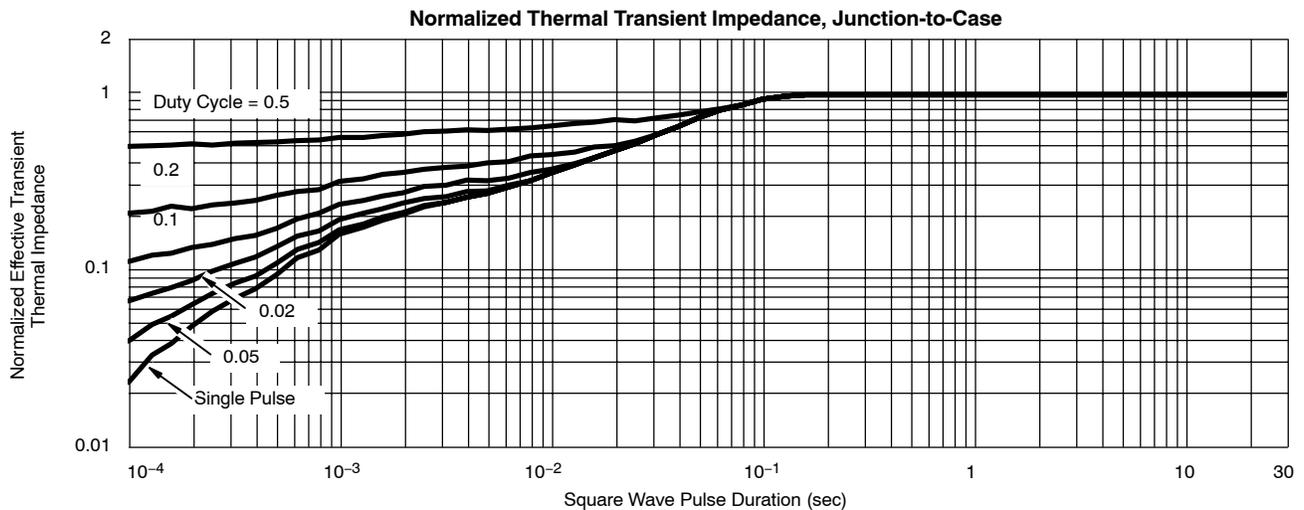
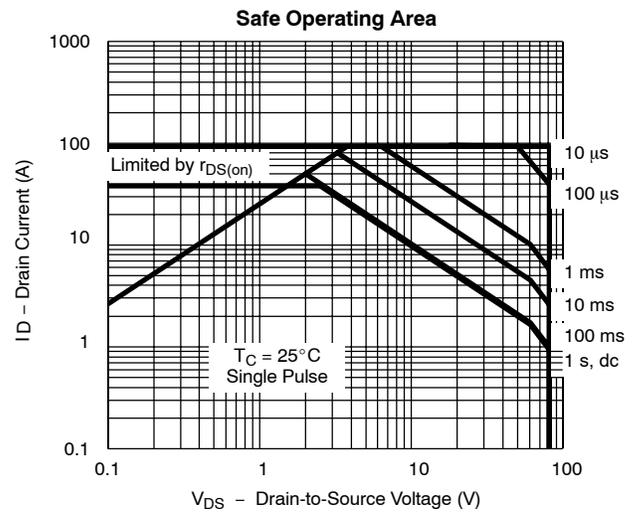
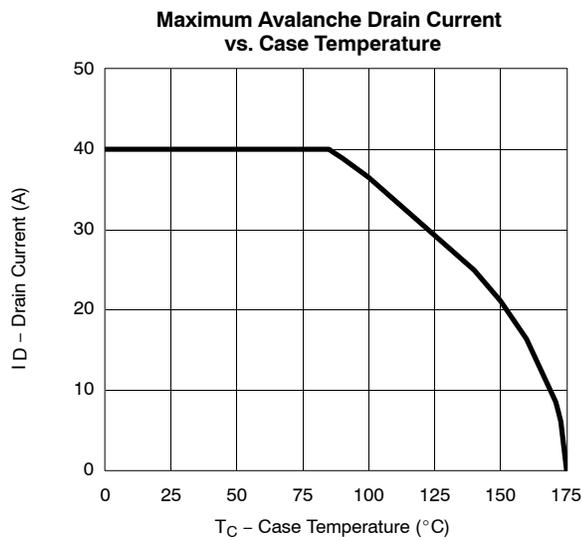
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



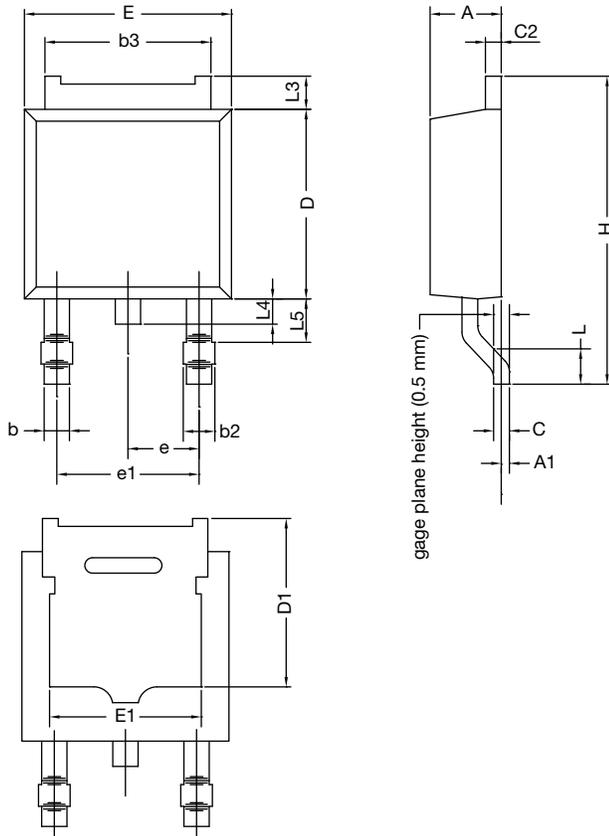
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



THERMAL RATINGS



TO-252AA CASE OUTLINE

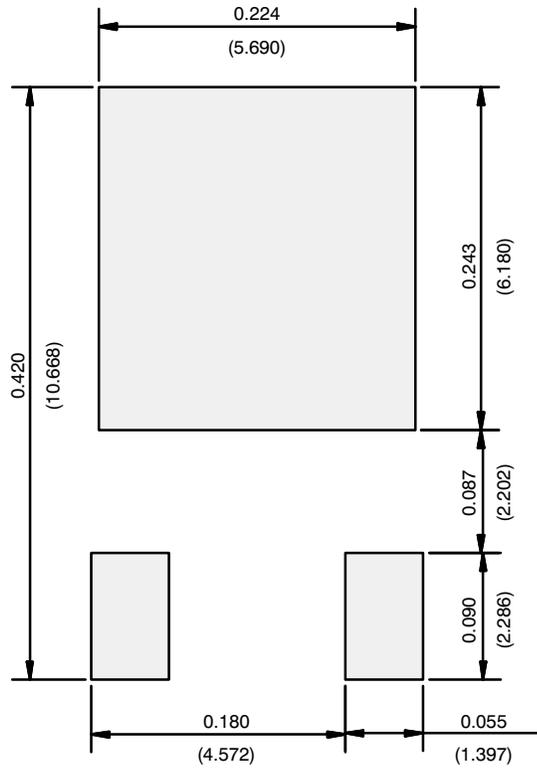


DIM.	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	2.18	2.38	0.086	0.094
A1	-	0.127	-	0.005
b	0.64	0.88	0.025	0.035
b2	0.76	1.14	0.030	0.045
b3	4.95	5.46	0.195	0.215
C	0.46	0.61	0.018	0.024
C2	0.46	0.89	0.018	0.035
D	5.97	6.22	0.235	0.245
D1	5.21	-	0.205	-
E	6.35	6.73	0.250	0.265
E1	4.32	-	0.170	-
H	9.40	10.41	0.370	0.410
e	2.28 BSC		0.090 BSC	
e1	4.56 BSC		0.180 BSC	
L	1.40	1.78	0.055	0.070
L3	0.89	1.27	0.035	0.050
L4	-	1.02	-	0.040
L5	1.14	1.52	0.045	0.060
ECN: X12-0247-Rev. M, 24-Dec-12 DWG: 5347				

Note

- Dimension L3 is for reference only.

RECOMMENDED MINIMUM PADS FOR DPAK (TO-252)



Recommended Minimum Pads
Dimensions in Inches/(mm)

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