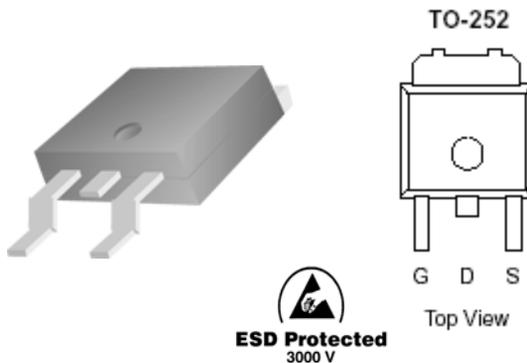


N-Channel 40-V (D-S) MOSFET

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $r_{DS(on)}$ and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

- Low $r_{DS(on)}$ provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe DPAK saves board space
- Fast switching speed
- High performance trench technology



PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ m(Ω)	I_D (A)
40	32 @ $V_{GS} = 10V$	33
	42 @ $V_{GS} = 4.5V$	29

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ^a	$T_C = 25^\circ C$	I_D	33	A
Pulsed Drain Current ^b		I_{DM}	40	
Continuous Source Current (Diode Conduction) ^a		I_S	30	A
Power Dissipation ^a	$T_C = 25^\circ C$	P_D	50.0	W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 175	$^\circ C$

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$R_{\theta JA}$	50	$^\circ C/W$
Maximum Junction-to-Case	$R_{\theta JC}$	3.0	$^\circ C/W$

Notes

- Surface Mounted on 1" x 1" FR4 Board.
- Pulse width limited by maximum junction temperature

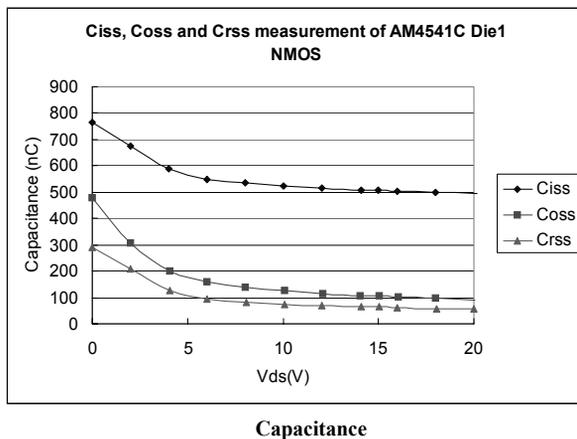
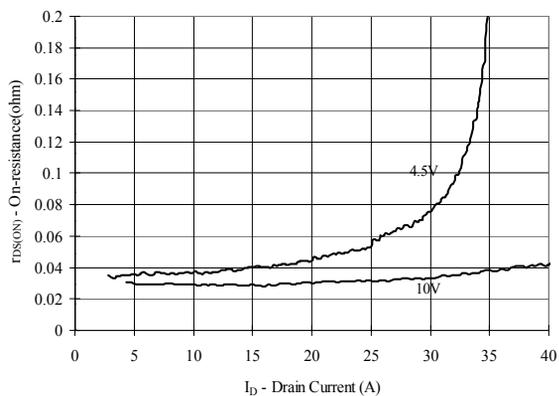
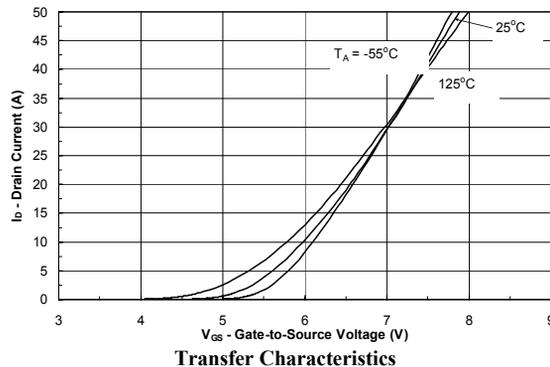
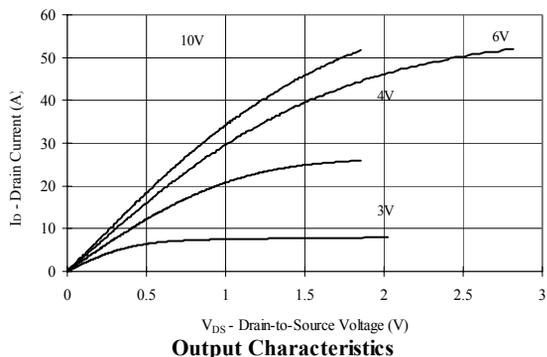
SPECIFICATIONS (T _A = 25°C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 uA	1			V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = 20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24 V, V _{GS} = 0 V			1	uA
		V _{DS} = 24 V, V _{GS} = 0 V, T _J = 55°C			25	
On-State Drain Current ^A	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	34			A
Drain-Source On-Resistance ^A	r _{DS(on)}	V _{GS} = 10 V, I _D = 33 A			32	mΩ
		V _{GS} = 4.5 V, I _D = 29 A			42	
Forward Transconductance ^A	g _{fs}	V _{DS} = 15 V, I _D = 33 A		22		S
Diode Forward Voltage	V _{SD}	I _S = 34 A, V _{GS} = 0 V		1.1		V
Pulsed Source Current (Body Diode) ^A	I _{SM}			5		A
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = 15 V, V _{GS} = 4.5 V, I _D = 33 A		5		nC
Gate-Source Charge	Q _{gs}			1.1		
Gate-Drain Charge	Q _{gd}			1.4		
Input Capacitance	C _{iss}	V _{DS} = 15 V, V _{GS} = 0 V, f = 1MHz		489		pF
Output Capacitance	C _{oss}			94		
Turn-On Delay Time	t _{d(on)}	V _{DD} = 25 V, R _L = 25 Ω, I _D = 34 A, V _{GEN} = 10 V		16		nS
Rise Time	t _r			5		
Turn-Off Delay Time	t _{d(off)}			23		
Fall-Time	t _f			3		

Notes

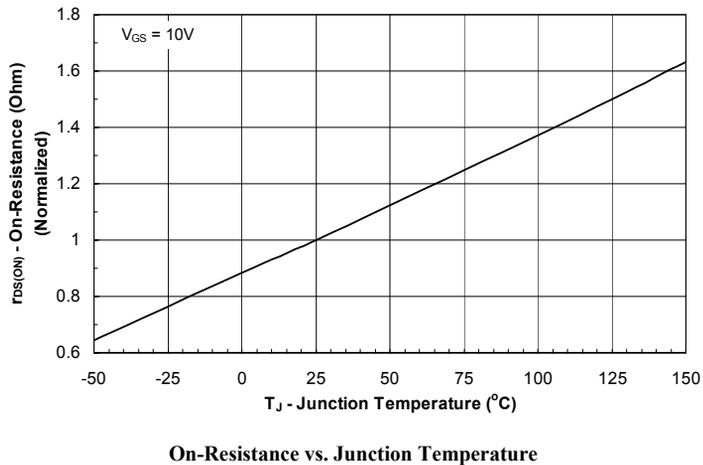
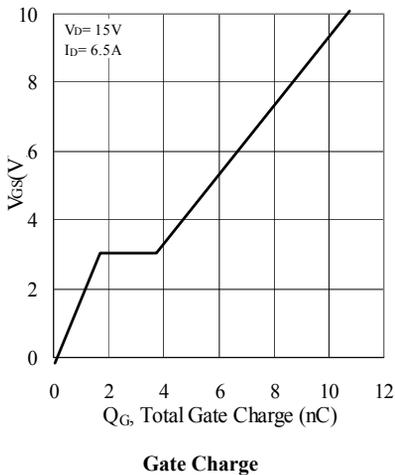
- Pulse test: PW ≤ 300us duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

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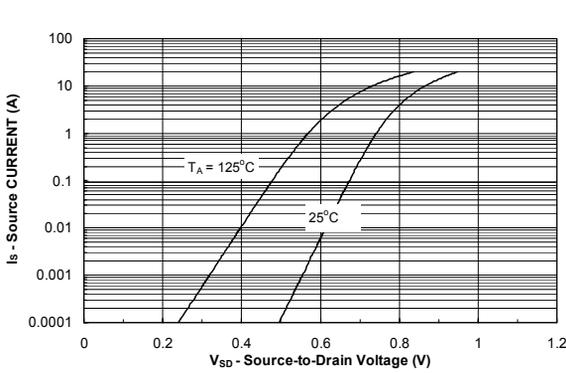
Typical Electrical Characteristics



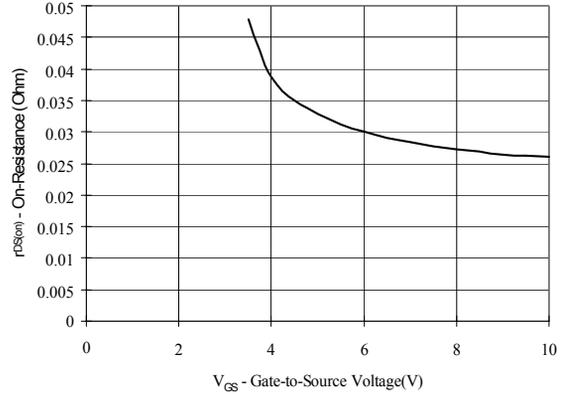
On Resistance vs. Drain Current



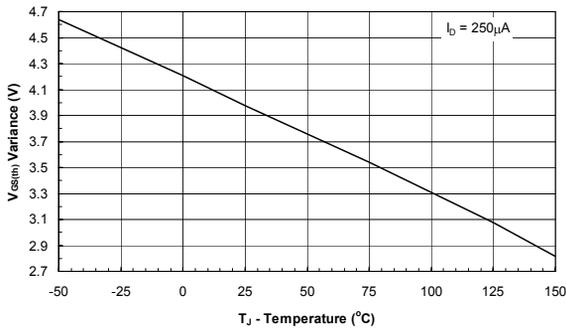
Typical Electrical Characteristics



Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

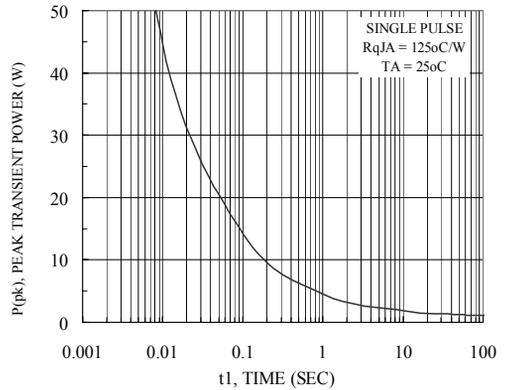


Figure 10. Single Pulse Maximum Power Dissipation

Normalized Thermal Transient Junction to Ambient

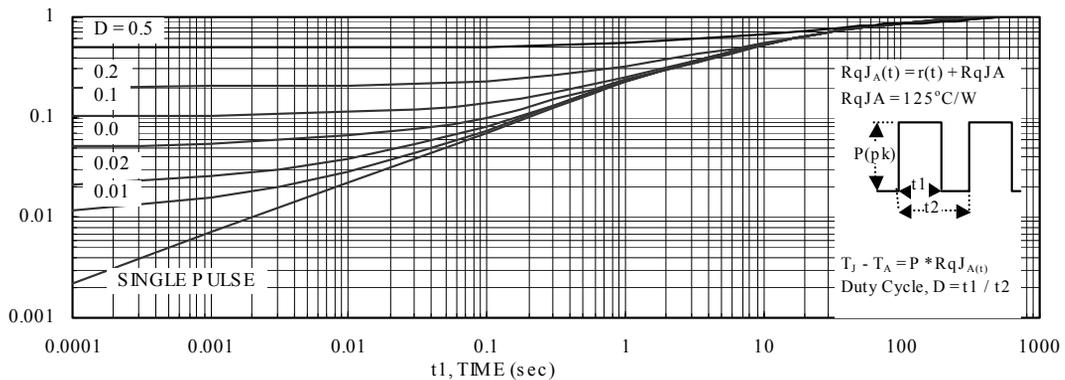
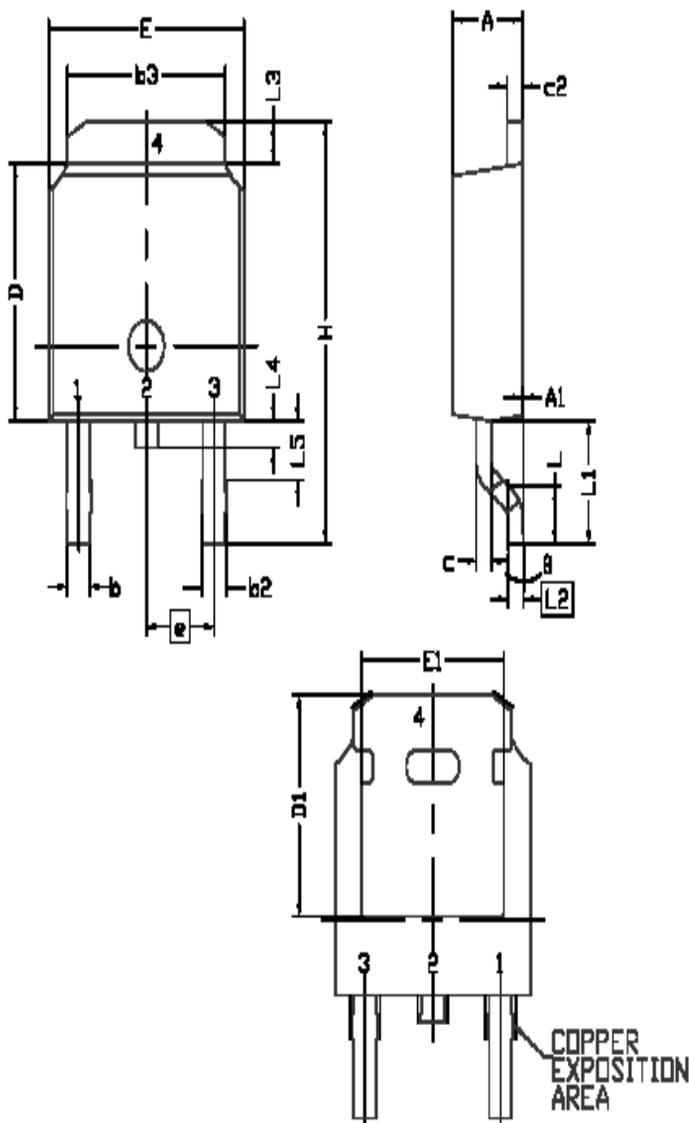


Figure 11. Transient Thermal Response Curve

Package Information



SYMBOL	DIMENSIONAL REQMTS		
	MIN	NOM	MAX
E	6.40	6.60	6.731
L	1.40	1.52	1.77
L1	2.743 REF		
L2	0.508 BSC		
L3	0.89	—	1.27
L4	0.64	—	1.01
L5	—	—	—
D	6.00	6.10	6.223
H	9.40	10.00	10.40
b	0.64	0.76	0.88
b2	0.77	0.84	1.14
b3	3.21	3.34	5.46
e	2.286 BSC		
A	2.20	2.30	2.38
A1	0	—	0.127
c	0.45	0.50	0.60
c2	0.45	0.50	0.58
D1	5.30	—	—
E1	4.40	—	—
θ	0°	—	10°