

N-Channel 16V (D-S) MOSFET

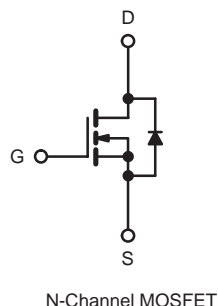
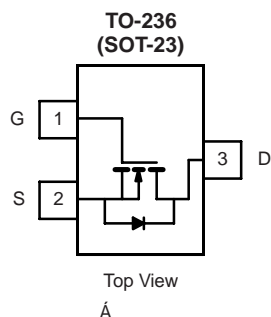
PRODUCT SUMMARY				
$V_{(BR)DSS}$ Min (V)	$r_{DS(on)}$ Max (Ω)	$V_{GS(th)}$ (V)	I_D (A)	
			DTS03K16	DTS03K16A
16	1.0 @ $V_{GS} = 10$ V	1.0 to 3.0	0.42	0.64
	1.4 @ $V_{GS} = 4.5$ V		0.35	0.53

FEATURES

- DT-Trench Power MOSFET

APPLICATIONS

- Direct Logic-Level Interface: TTL/CMOS
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc.
- Battery Operated Systems
- Solid-State Relays



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter		Symbol	Limit		Unit
			DTS03K16	DTS03K16A	
Drain-Source Voltage		V _{DS}	16		V
Gate-Source Voltage		V _{GS}	± 8		
Continuous Drain Current (T _J = 150 °C)	T _A = 25 °C	I _D	0.42	0.64	A
	T _A = 70 °C		0.33	0.51	
Pulsed Drain Current ^a		I _{DM}	0.8	1.5	
Power Dissipation	T _A = 25 °C	P _D	0.35	0.8	W
	T _A = 70 °C		0.22	0.51	
Thermal Resistance, Junction-to-Ambient		R _{thJA}	357	156	°C/W
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55 to 150		°C

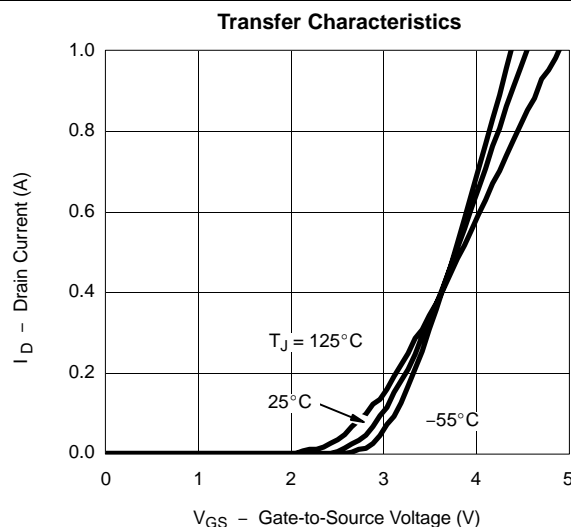
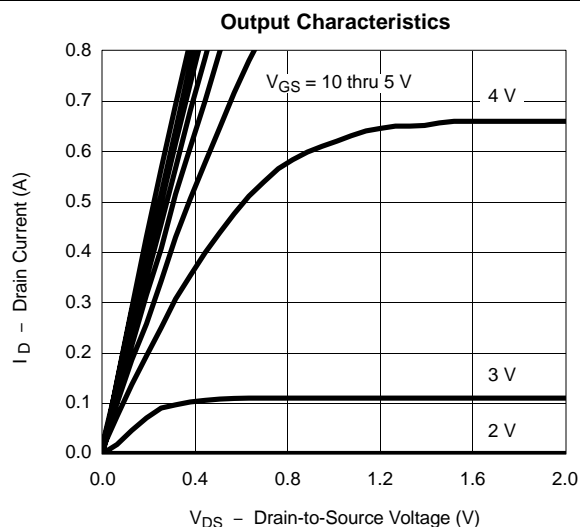
Notes

a. Pulse width limited by maximum junction temperature.

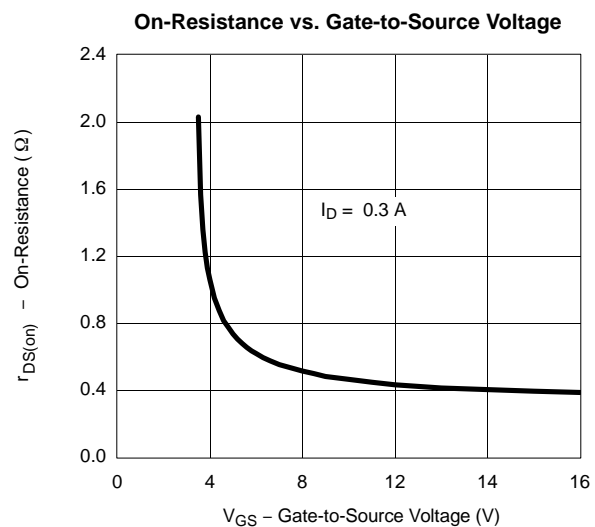
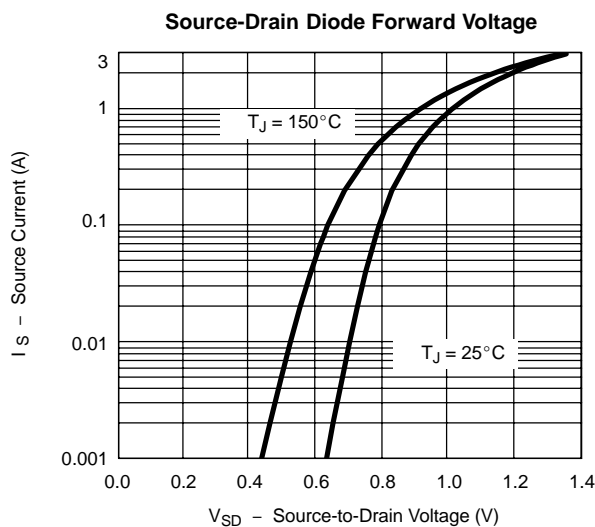
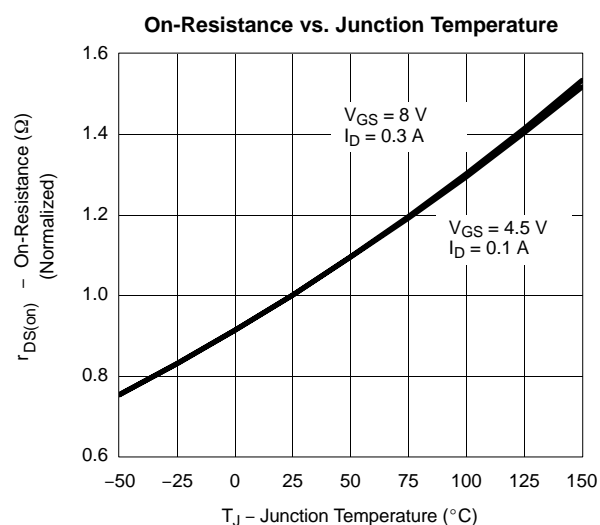
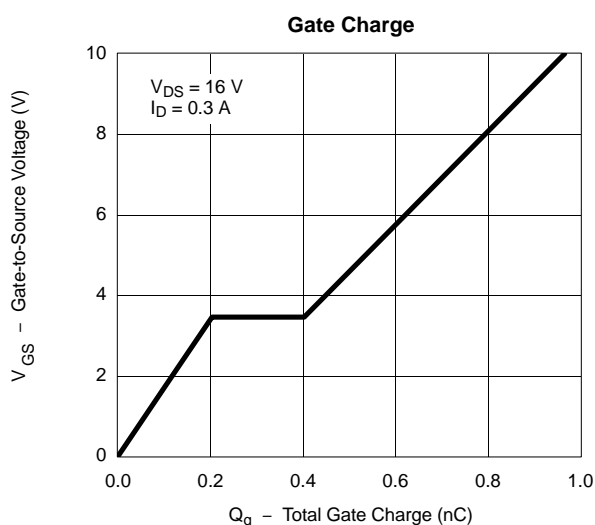
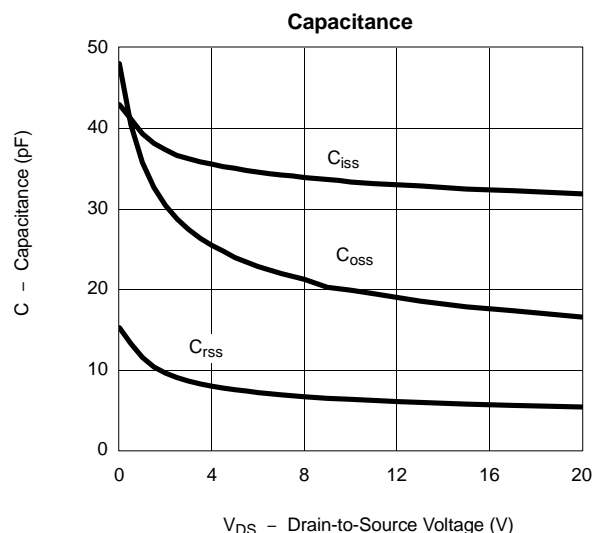
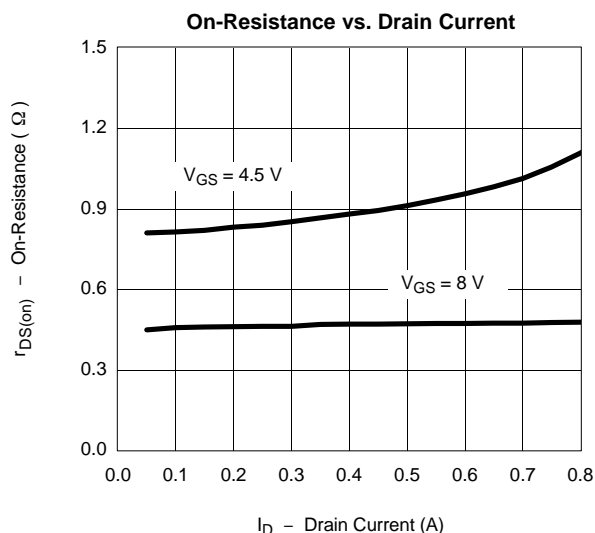
SPECIFICATIONS (T _A = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 10 μA	16			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 0.25 mA	1.0	2.0	3.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 16 V, V _{GS} = 0 V			1	μA
		V _{DS} = 16 V, V _{GS} = 0 V, T _J = 55 °C			10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} = 10 V, V _{GS} = 8 V	DTS03K16	0.5		A
			DTS03K16A	0.8		
Drain-Source On-Resistance ^a	r _{DS(on)}	V _{GS} = 4.5 V, I _D = 0.1 A		0.8	1.4	Ω
		V _{GS} = 10 V, I _D = 0.3 A		0.47	1.0	
Forward Transconductance ^a	g _{fs}	V _{DS} = 10 V, I _D = 0.3 A		550		mS
Diode Forward Voltage	V _{SD}	I _S = 0.3 A, V _{GS} = 0 V		0.85	1.2	V
Dynamic ^b						
Total Gate Charge	Q _g	V _{DS} = 16 V, V _{GS} = 10 V I _D ≅ 0.3 A		1000	1500	pC
Gate-Source Charge	Q _{gs}			205		
Gate-Drain Charge	Q _{gd}			200		
Gate Resistance	R _g			48		Ω
Turn-On Time	t _{d(on)}	V _{DD} = 15 V, R _L = 50 Ω I _D ≅ 0.3 A, V _{GEN} = 10 V R _G = 6 Ω		4.5	8	ns
	t _r			8	15	
Turn-Off Time	t _{d(off)}			9	15	
	t _f			6.3	12	

Notes

- a. Pulse test: $PW \leq 300\text{ }\mu\text{s}$ duty cycle $\leq 2\%$.
 b. Guaranteed by design, not subject to production testing.

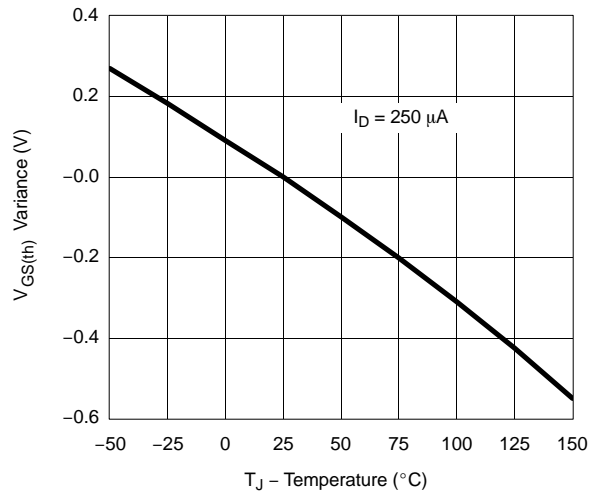
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)


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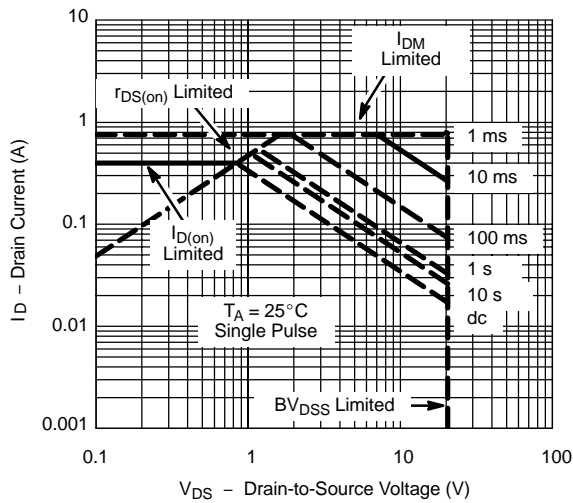


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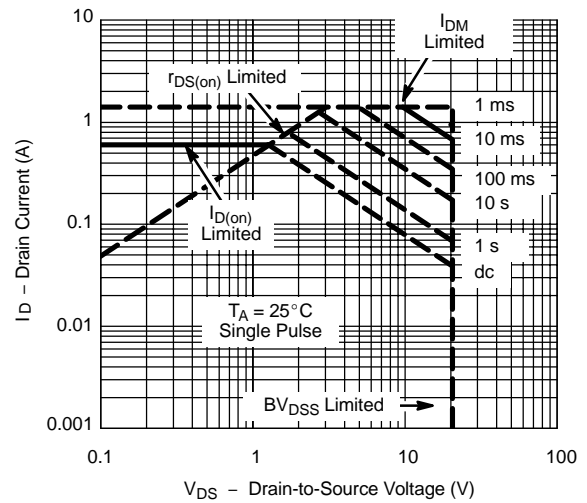
Threshold Voltage



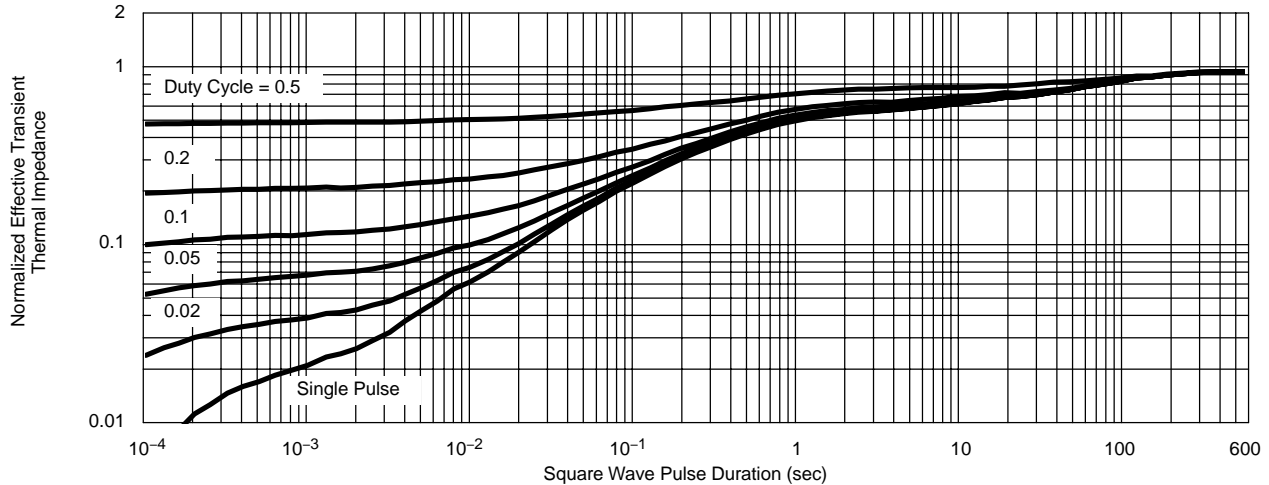
Safe Operating Area (TO-236, DTS03K16 Only)



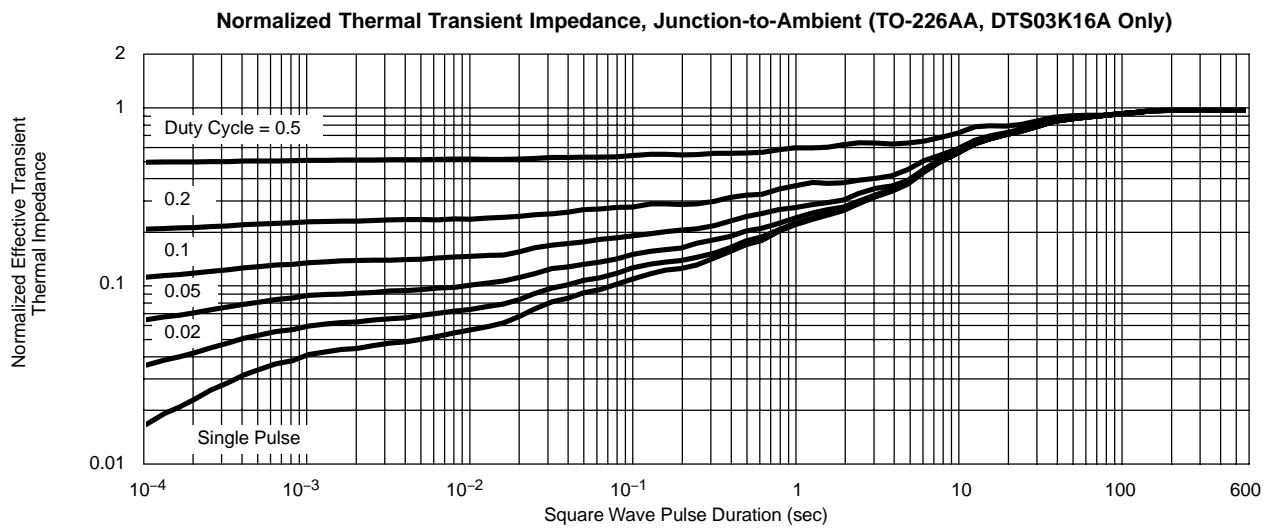
Safe Operating Area (TO-226AA, DTS03K16A Only)



Normalized Thermal Transient Impedance, Junction-to-Ambient (TO-236, DTS03K16 Only)



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



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