



N-Channel 60-V (D-S), 175°C MOSFET, Logic Level

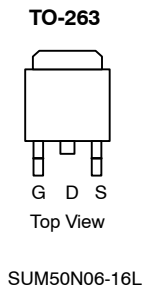
PRODUCT SUMMARY		
$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A)
60	0.016 @ $V_{GS} = 10$ V	50
	0.022 @ $V_{GS} = 4.5$ V	43

FEATURES

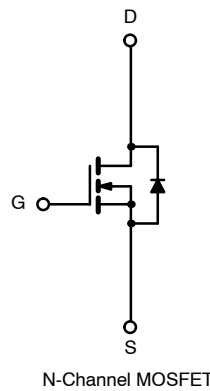
- TrenchFET® Power MOSFET
- 175°C Junction Temperature

APPLICATIONS

- 12-V Automotive Systems
 - Load Switch
 - Motor Drive
 - DC/DC



DRAIN connected to TAB



ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 175^\circ\text{C}$)	I_D	$T_C = 25^\circ\text{C}$	A
		$T_C = 100^\circ\text{C}$	
Pulsed Drain Current	I_{DM}	100	A
Avalanche Current	I_{AR}	40	
Repetitive Avalanche Energy ^a	E_{AR}	80	mJ
Power Dissipation	P_D	$T_C = 25^\circ\text{C}$	W
		$T_A = 25^\circ\text{C}^c$	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 175	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	Limit	Unit
Junction-to-Ambient (PCB Mount) ^c	R_{thJA}	40	$^\circ\text{C/W}$
Junction-to-Case	R_{thJC}	1.6	

Notes:

- Duty cycle $\leq 1\%$.
- See SOA curve for voltage derating.
- Surface Mounted on FR4 Board, $t \leq 10$ sec.

SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	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 _{DS} = 250 μA	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} = 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			150	
On-State Drain Current ^a	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	50			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 20 A		0.013	0.016	Ω
		V _{GS} = 10 V, I _D = 20 A, T _J = 125 °C			0.028	
		V _{GS} = 10 V, I _D = 20 A, T _J = 175 °C			0.036	
		V _{GS} = 4.5 V, I _D = 20 A		0.017	0.022	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 20 A		50		S
Dynamic^b						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		1325		pF
Output Capacitance	C _{oss}			265		
Reversen Transfer Capacitance	C _{rss}			115		
Total Gate Charge ^c	Q _g	V _{DS} = 30 V, V _{GS} = 10 V, I _D = 50 A		25	40	nC
Gate-Source Charge ^c	Q _{gs}			5.5		
Gate-Drain Charge ^c	Q _{gd}			6.5		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 30 V, R _L = 0.8 Ω I _D = 50 A, V _{GEN} = 10 V, R _G = 2.5 Ω		10	20	ns
Rise Time ^c	t _r			9	20	
Turn-Off Delay Time ^c	t _{d(off)}			25	50	
Fall Time ^c	t _f			7	15	
Source-Drain Diode Ratings and Characteristics (T_C = 25 °C)^b						
Continuous Current	I _S				50	A
Pulsed Current	I _{SM}				100	
Forward Voltage ^a	V _{SD}	I _F = 50 A, V _{GS} = 0 V		1.0	1.5	V
Reverse Recovery Time	t _{rr}	I _F = 50 A, di/dt = 100 A/μs		35	70	ns
Peak Reverse Recovery Current	I _{RM(REC)}			2.3	4	A
Reverse Recovery Charge	Q _{rr}			0.04	0.14	μC

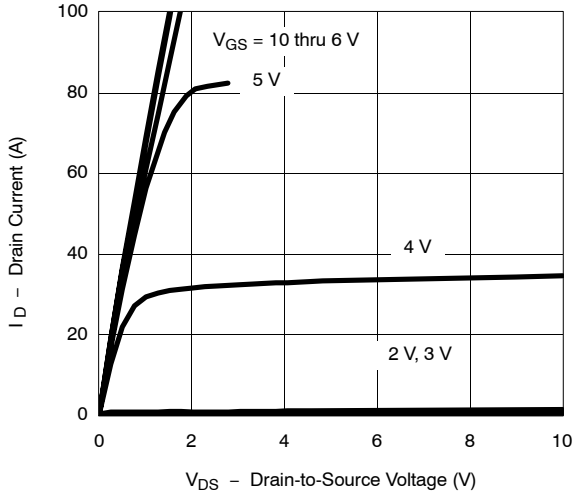
Notes:

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

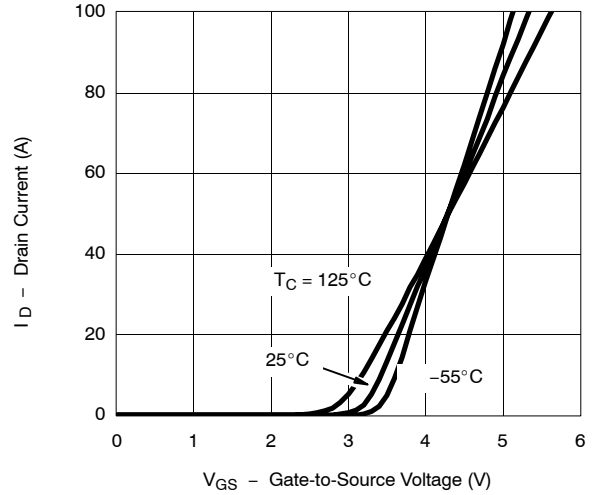


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

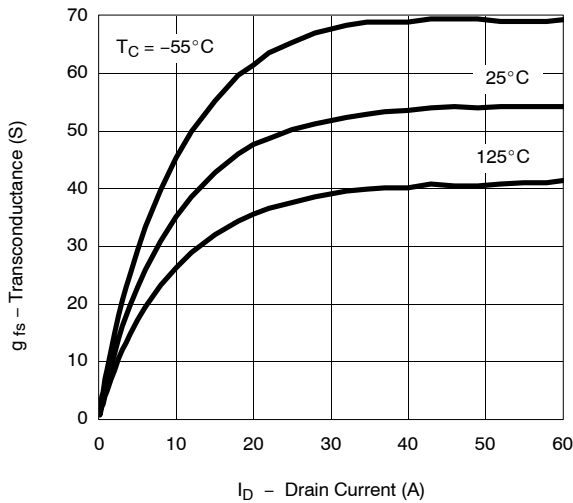
Output Characteristics



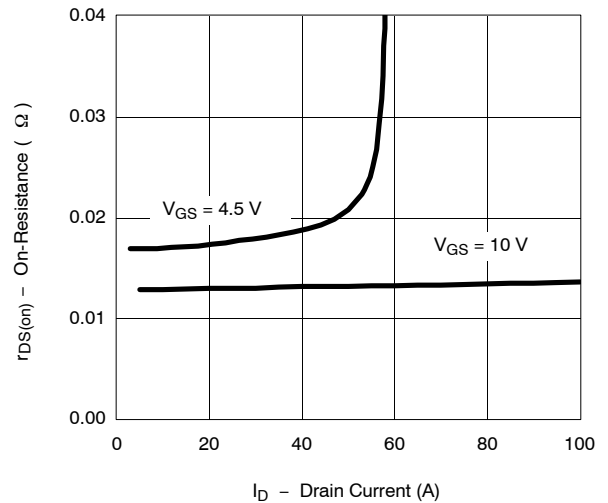
Transfer Characteristics



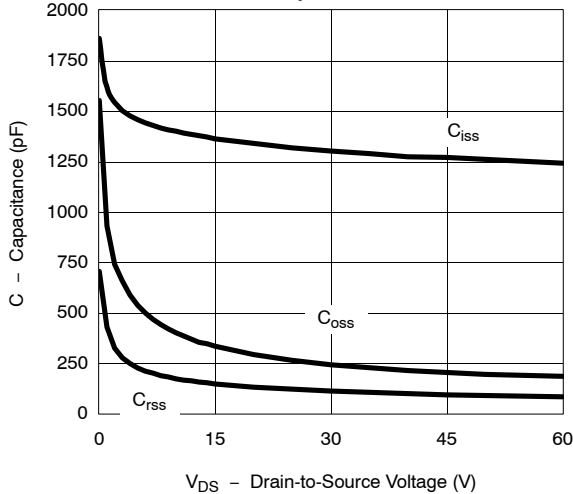
Transconductance



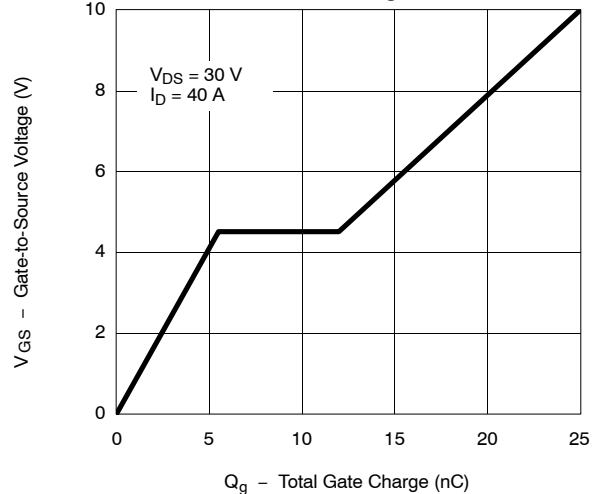
On-Resistance vs. Drain Current



Capacitance



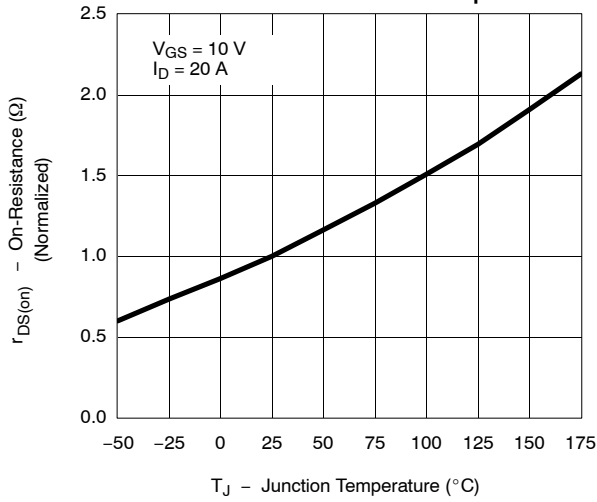
Gate Charge



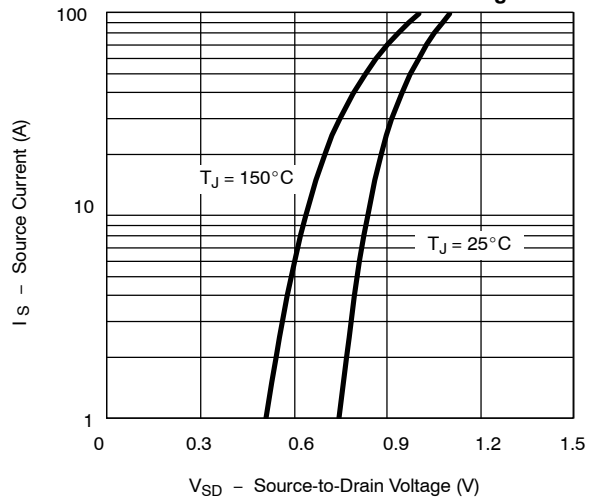


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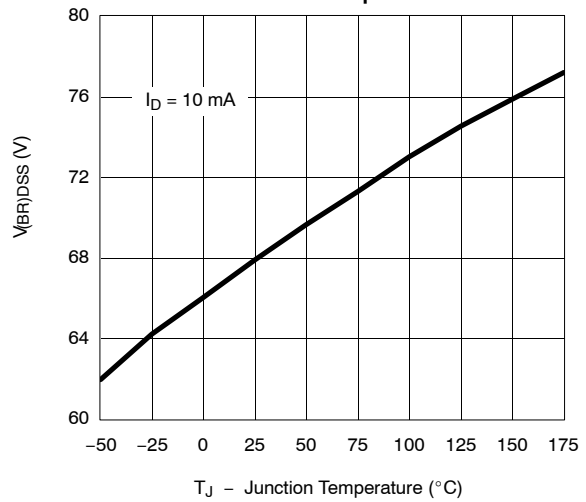
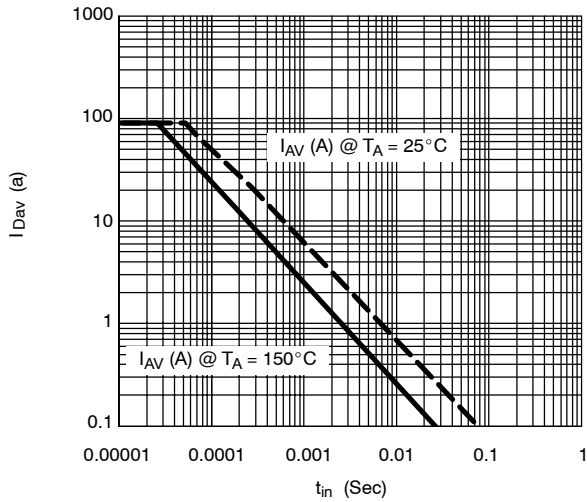
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage



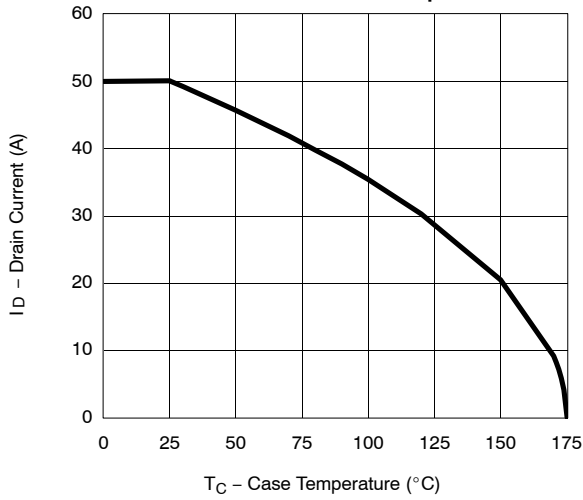
Drain Source Breakdown vs. Junction Temperature



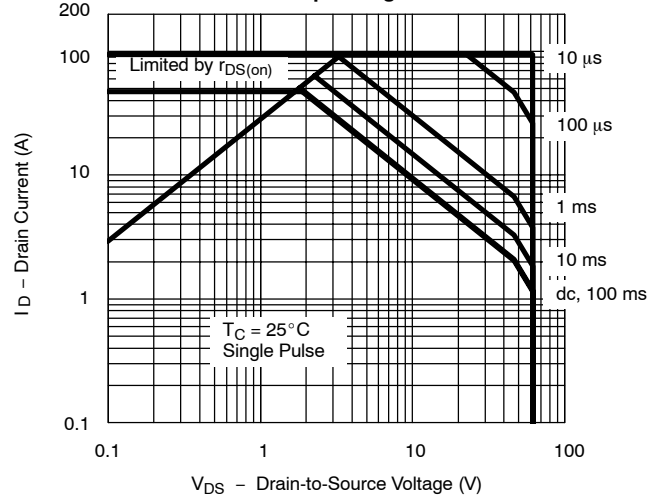


THERMAL RATINGS

Drain Current vs. Case Temperature



Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case

