



N-Channel 55-V (D-S) 175°C MOSFET

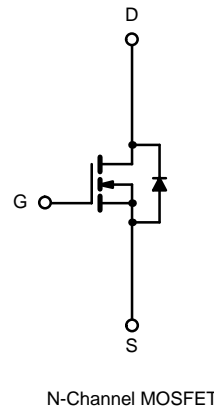
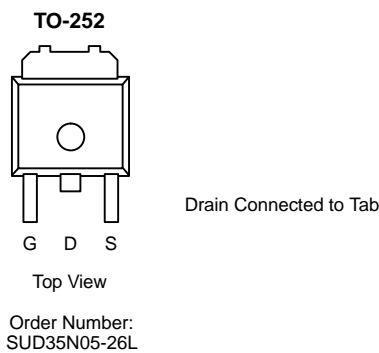
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A) ^a
55	0.020 @ $V_{GS} = 10$ V	35
	0.026 @ $V_{GS} = 4.5$ V	30

FEATURES

- TrenchFET® Power MOSFETS
- 175°C Rated Maximum Junction Temperature
- Low Input Capacitance

APPLICATIONS

- Automotive Fuel Injection Systems
- Automotive Wipers
- Automotive Door Modules



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	55	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 175^\circ\text{C}$) ^b	I_D	$T_C = 25^\circ\text{C}$	A
		$T_C = 100^\circ\text{C}$	
Pulsed Drain Current	I_{DM}	80	A
Continuous Source Current (Diode Conduction) ^a	I_S	35	
Maximum Power Dissipation	P_D	$T_C = 25^\circ\text{C}$	W
		$T_A = 25^\circ\text{C}$	
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 ^b	R_{thJA}	$t \leq 10$ sec	17	20	$^\circ\text{C/W}$
		Steady State	50	60	
Junction-to-Case	R_{thJC}	2.5	3.0		
Junction-to-Lead	R_{thJL}	5.0	6.0		

Notes

- Package Limited.
- Surface Mounted on 1" x 1" FR4 Board, $t \leq 10$ sec.
- 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	55			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 44 V, V _{GS} = 0 V			1	μA
		V _{DS} = 44 V, V _{GS} = 0 V, T _J = 125 °C			50	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 5 V	35			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 20 A		0.0165	0.020	Ω
		V _{GS} = 10 V, I _D = 20 A, T _J = 125 °C			0.035	
		V _{GS} = 4.5 V, I _D = 15 A		0.0215	0.026	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 20 A		25		S
Dynamic^a						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, F = 1 MHz		885		pF
Output Capacitance	C _{oss}			185		
Reverse Transfer Capacitance	C _{rss}			80		
Total Gate Charge ^c	Q _g	V _{DS} = 25 V, V _{GS} = 5 V, I _D = 35 A		10.5	13	nC
Gate-Source Charge ^c	Q _{gs}			4		
Gate-Drain Charge ^c	Q _{gd}			4.8		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 25 V, R _L = 0.3 Ω I _D ≅ 35 A, V _{GEN} = 10 V, R _G = 2.5 Ω		5	8	ns
Rise Time ^c	t _r			18	30	
Turn-Off Delay Time ^c	t _{d(off)}			20	30	
Fall Time ^c	t _f			100	150	
Source-Drain Diode Ratings and Characteristic (T_C = 25 °C)						
Continuous Current	I _S				35	A
Pulsed Current	I _{SM}				80	
Diode Forward Voltage ^b	V _{SD}	I _F = 80 A, V _{GS} = 0 V			1.5	V
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 35 A, di/dt = 100 A/μs		25	40	ns

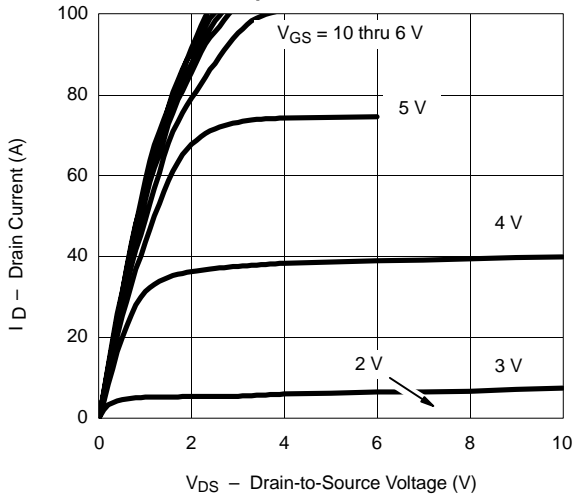
Notes

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

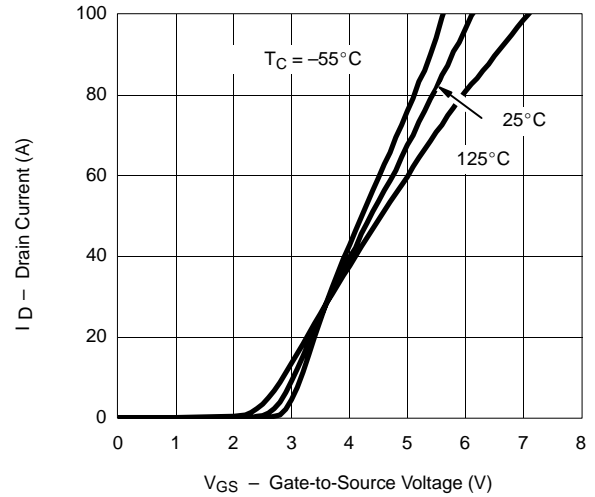


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

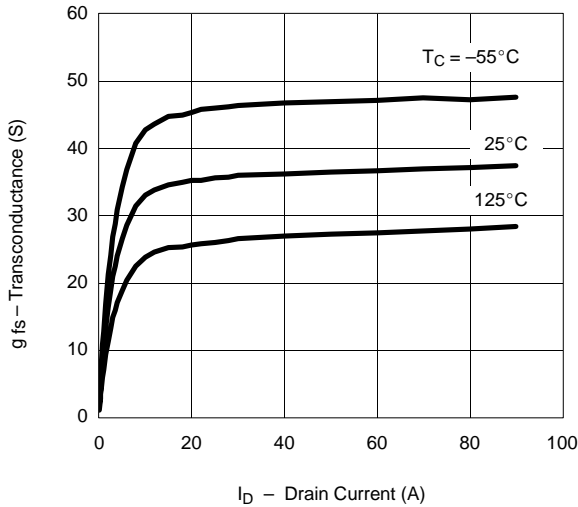
Output Characteristics



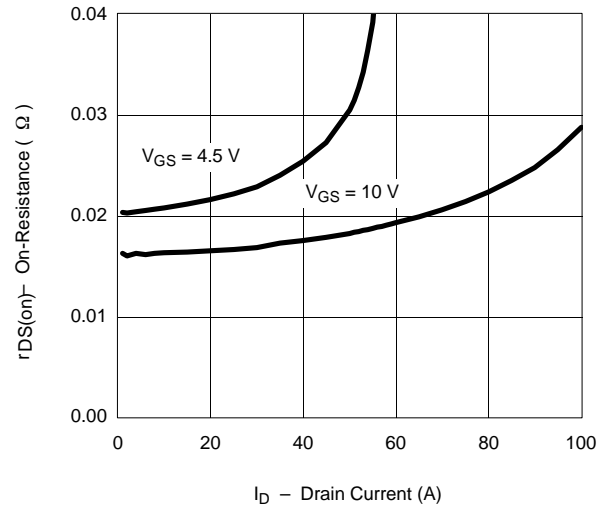
Transfer Characteristics



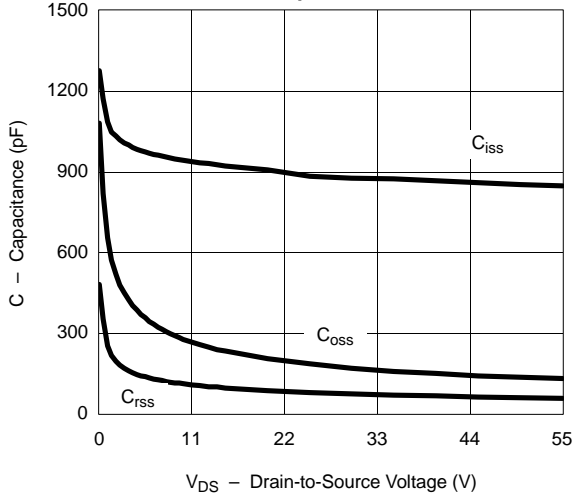
Transconductance



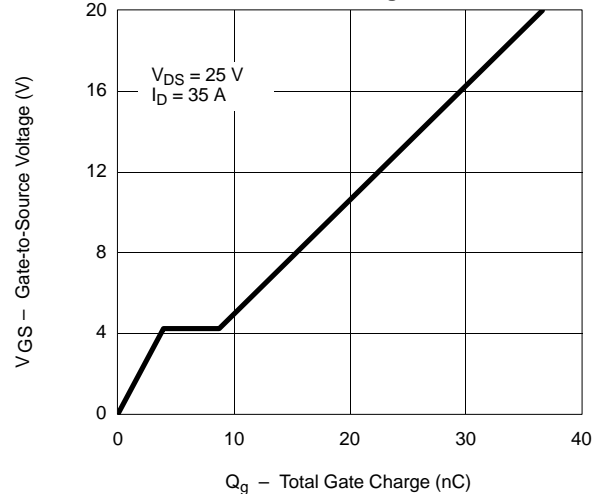
On-Resistance vs. Drain Current



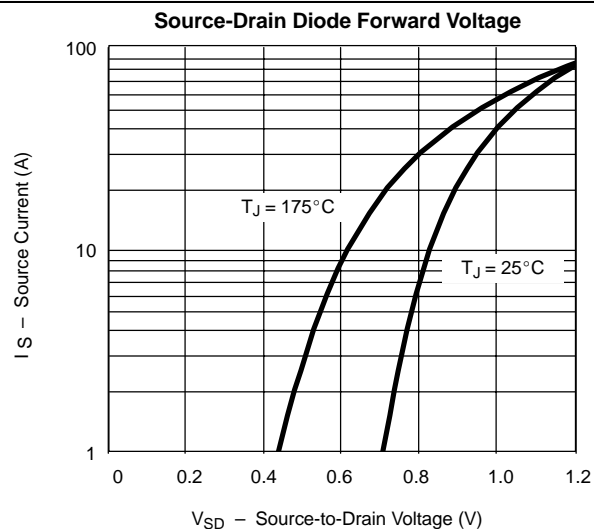
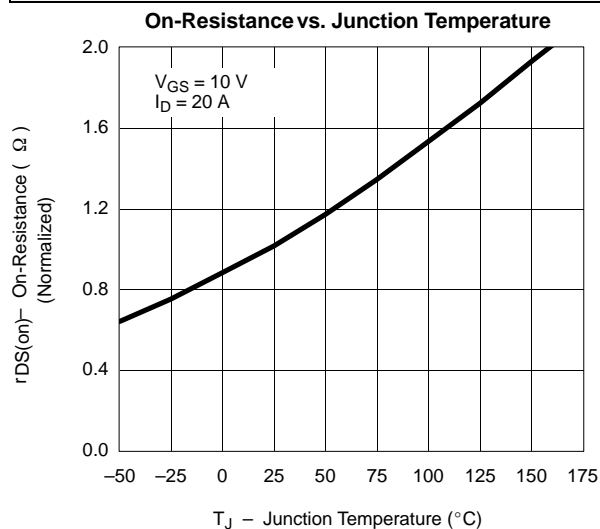
Capacitance



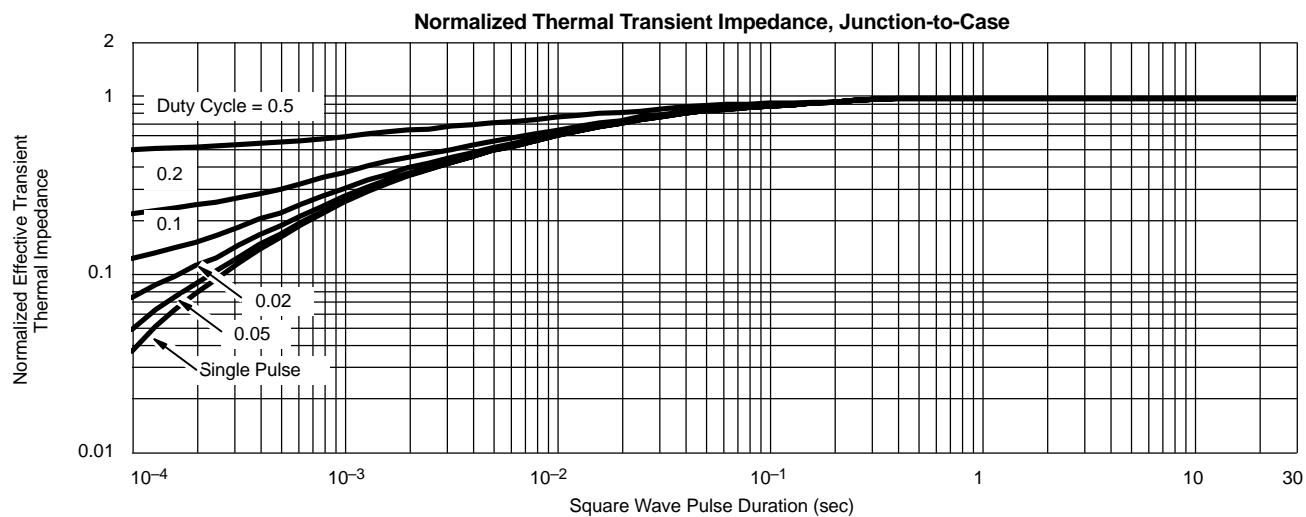
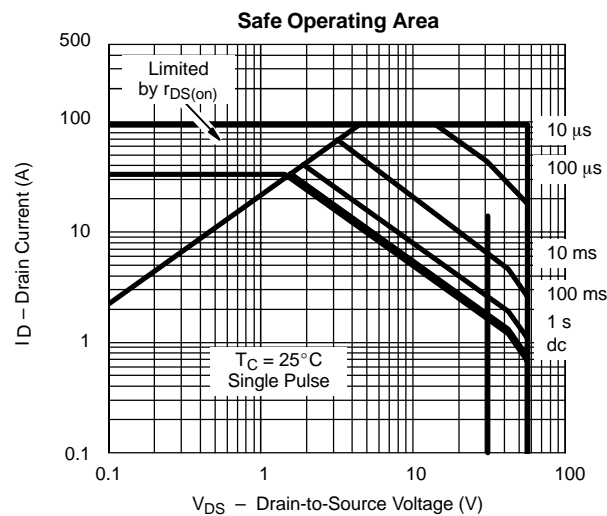
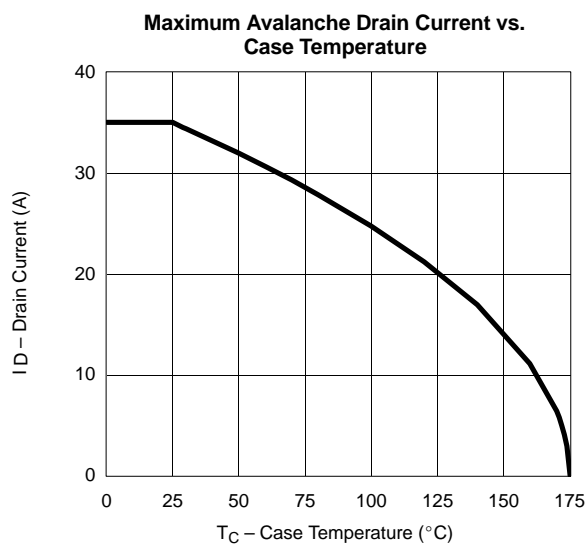
Gate Charge



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



THERMAL RATINGS





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