



N-Channel 60-V (D-S), 175°C MOSFET

PRODUCT SUMMARY

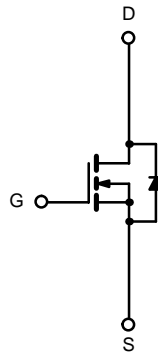
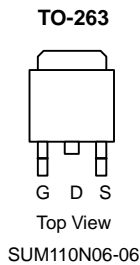
$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A)
60	0.006	110 ^a

FEATURES

- TrenchFET® Power MOSFET
- 175°C Junction Temperature

APPLICATIONS

- Automotive Applications Such As:
 - ABS
 - EPS
 - Motor Drives
- Industrial



N-Channel MOSFET

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

Parameter	Symbol	Limit	Unit
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_J = 175^\circ\text{C}$)	I_D	$T_C = 25^\circ\text{C}$	110 ^a
		$T_C = 125^\circ\text{C}$	78
Pulsed Drain Current	I_{DM}	300	A
Avalanche Current	I_{AR}	70	
Repetitive Avalanche Energy ^b	E_{AR}	245	mJ
Power Dissipation	P_D	$T_C = 25^\circ\text{C}$	230 ^c
		$T_A = 25^\circ\text{C}^d$	3.75
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	R_{thJA}	40	$^\circ\text{C/W}$
Junction-to-Case	R_{thJC}	0.65	

Notes

- Package limited.
- Duty cycle $\leq 1\%$.
- See SOA curve for voltage derating.
- When mounted on 1" square PCB (FR-4 material).

For SPICE model information via the Worldwide Web: <http://www.vishay.com/www/product/spice.htm>



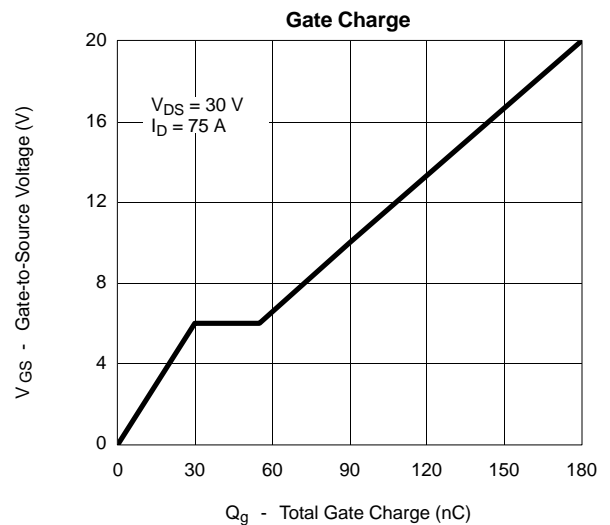
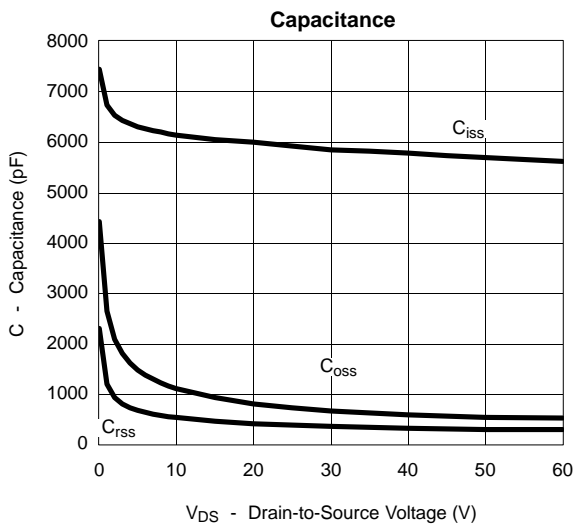
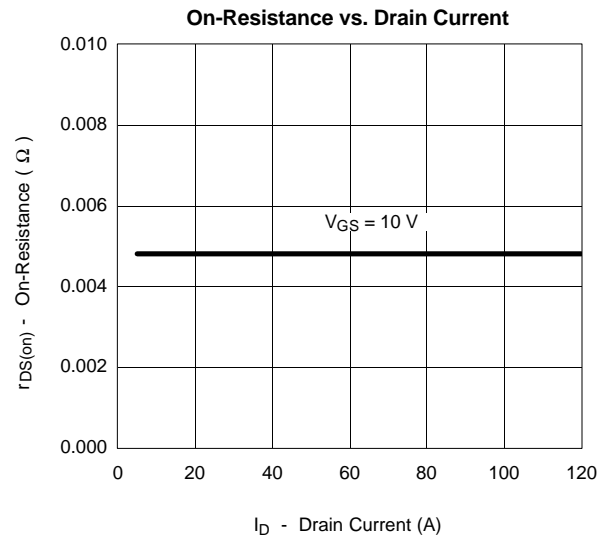
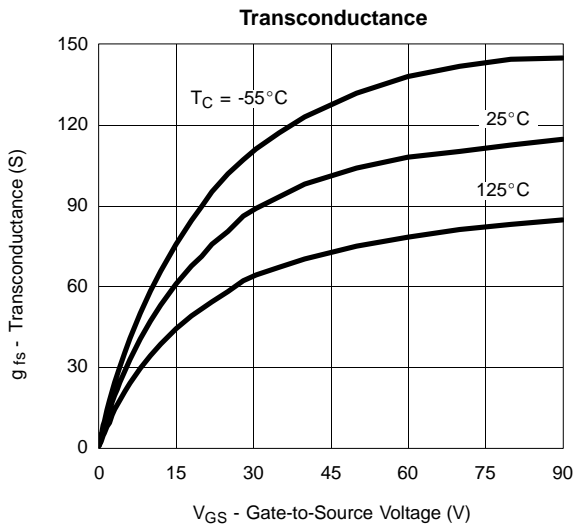
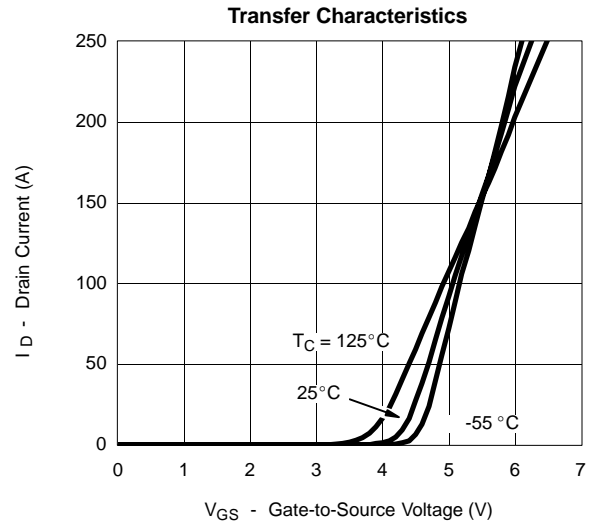
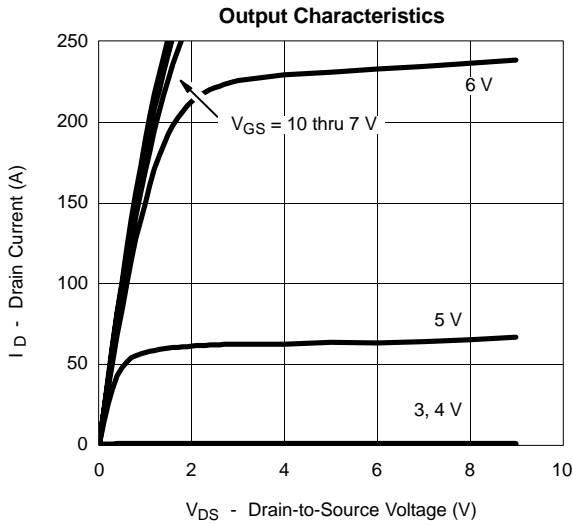
SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	2.0	3.0	4.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 48 V, V _{GS} = 0 V			1	μA
		V _{DS} = 48 V, V _{GS} = 0 V, T _J = 125 °C			50	
		V _{DS} = 48 V, V _{GS} = 0 V, T _J = 175 °C			250	
On-State Drain Current ^a	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	120			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 30 A		0.0048	0.006	Ω
		V _{GS} = 10 V, I _D = 30 A, T _J = 125 °C			0.0105	
		V _{GS} = 10 V, I _D = 30 A, T _J = 175 °C			0.013	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 30 A	30			S
Dynamic^b						
Input Capacitance	C _{iSS}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		6000		pF
Output Capacitance	C _{oss}			720		
Reverse Transfer Capacitance	C _{rSS}			370		
Total Gate Charge ^c	Q _g	V _{DS} = 30 V, V _{GS} = 10 V, I _D = 75 A		90	135	nC
Gate-Source Charge ^c	Q _{gs}			30		
Gate-Drain Charge ^c	Q _{gd}			25		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 30 V, R _L = 0.47 Ω I _D = 75 A, V _{GEN} = 10 V, R _G = 2.5 Ω		20	30	ns
Rise Time ^c	t _r			90	140	
Turn-Off Delay Time ^c	t _{d(off)}			40	60	
Fall Time ^c	t _f			10	20	
Source-Drain Diode Ratings and Characteristics (T_C = 25 °C)^b						
Continuous Current	I _S				110	A
Pulsed Current	I _{SM}				300	
Forward Voltage ^a	V _{SD}	I _F = 75 A, V _{GS} = 0 V		1.0	1.5	V
Reverse Recovery Time	t _{rr}	I _F = 75 A, di/dt = 100 A/μs		75	125	ns
Peak Reverse Recovery Current	I _{RM(REC)}			3	5	A
Reverse Recovery Charge	Q _{rr}			0.113	0.313	μC

Notes

- Pulse test: pulse width ≤ 300 μsec, duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.
- Independent of operating temperature.

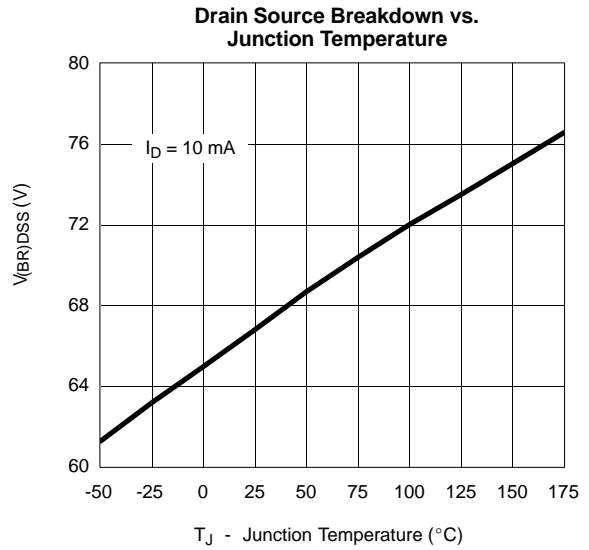
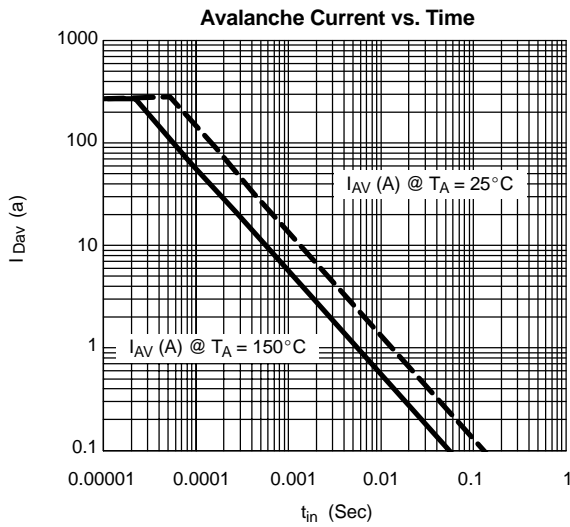
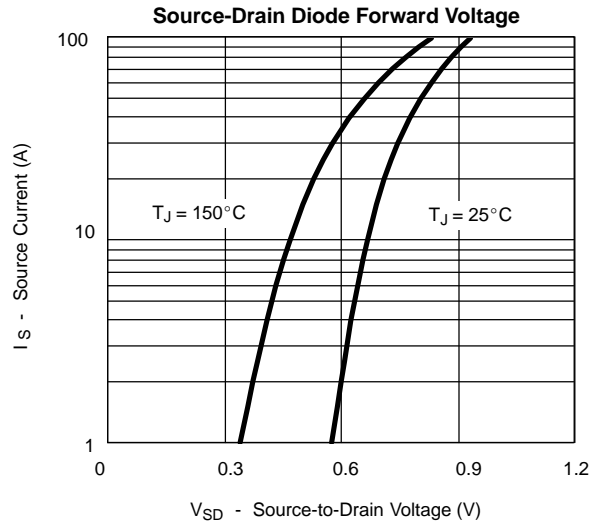
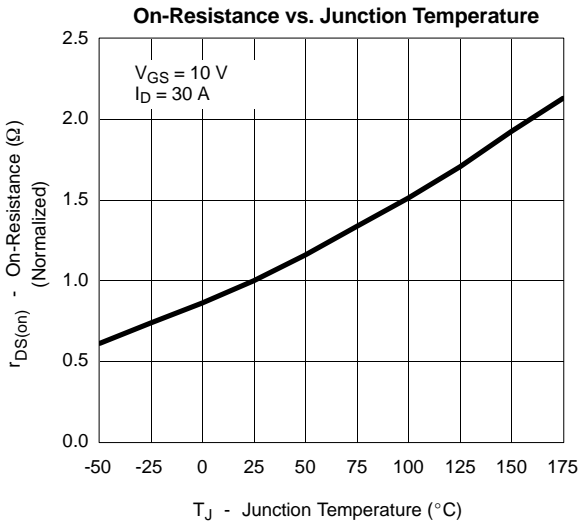


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)





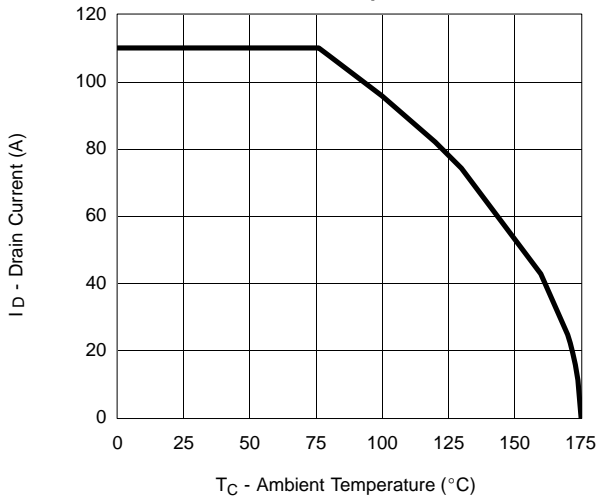
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



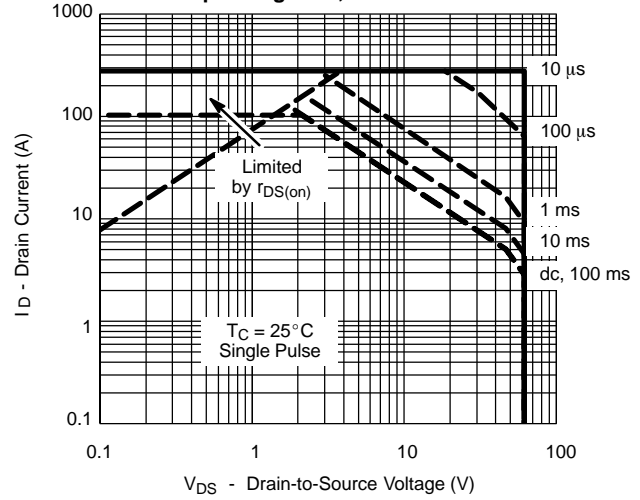


THERMAL RATINGS

Maximum Avalanche and Drain Current vs. Case Temperature



Safe Operating Area, Junction-to-Case



Normalized Thermal Transient Impedance, Junction-to-Case

