



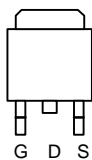
N-Channel 100-V (D-S) 175°C MOSFET

PRODUCT SUMMARY		
$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A)
100	0.035 @ $V_{GS} = 10$ V	34
	0.040 @ $V_{GS} = 6$ V	32

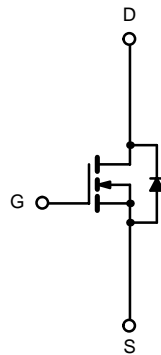
FEATURES

- TrenchFET® Power MOSFETS
- 175°C Junction Temperature
- New Low Thermal Resistance Package

TO-263



Top View



N-Channel MOSFET

Ordering Information: SUM34N10-35

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V_{DS}	100	V	
Gate-Source Voltage	V_{GS}	± 20		
Continuous Drain Current ($T_J = 175^\circ\text{C}$)	I_D	$T_C = 25^\circ\text{C}$	34 ^a	A
		$T_C = 125^\circ\text{C}$	20 ^a	
Pulsed Drain Current	I_{DM}	60		
Avalanche Current	I_{AR}	34		
Repetitive Avalanche Energy ^b	E_{AR}	L = 0.1 mH	57.8	mJ
Maximum Power Dissipation ^b			$T_C = 25^\circ\text{C}$	100 ^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 (PCB Mounted) ^d	R_{thJA}	40	$^\circ\text{C/W}$
Junction-to-Case (Drain)	R_{thJC}	1.5	

Notes

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

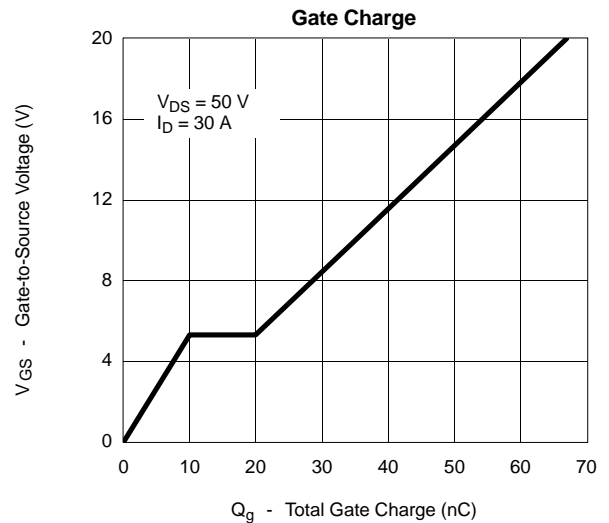
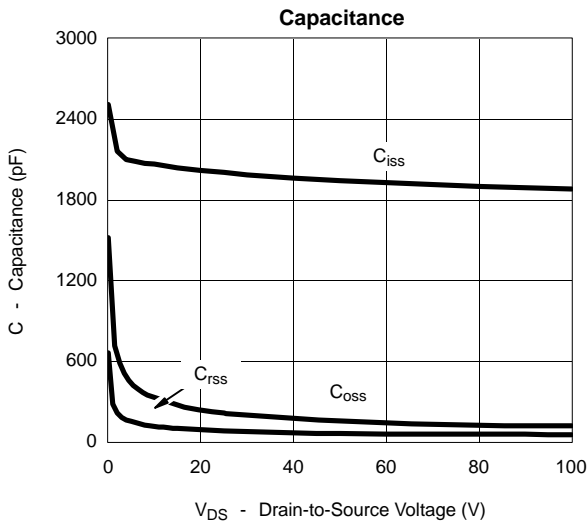
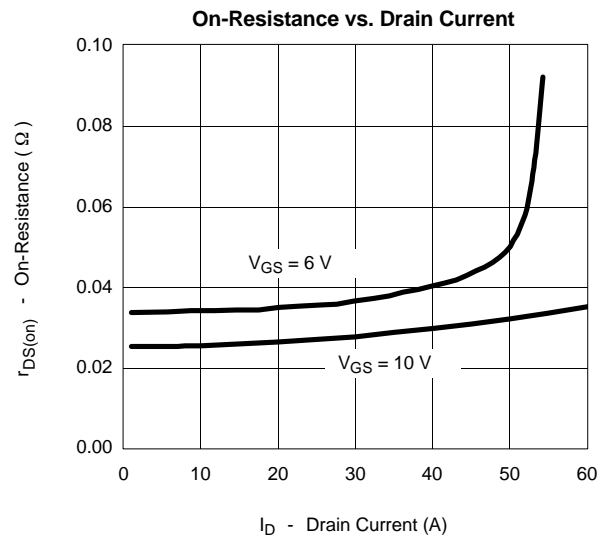
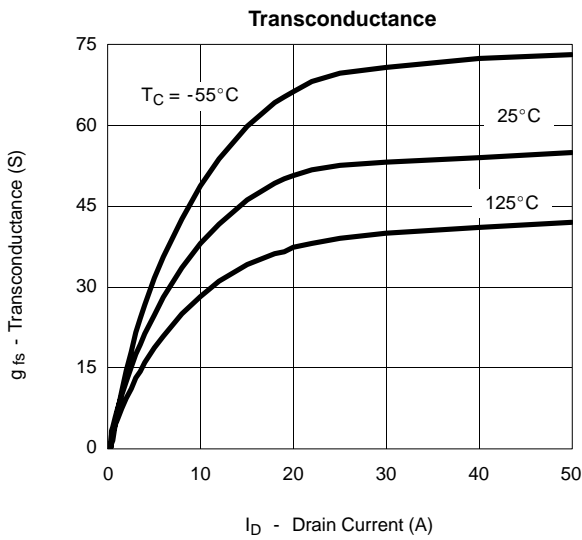
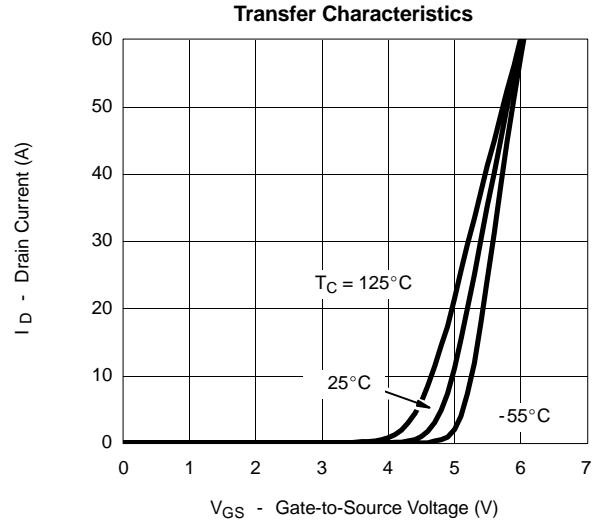
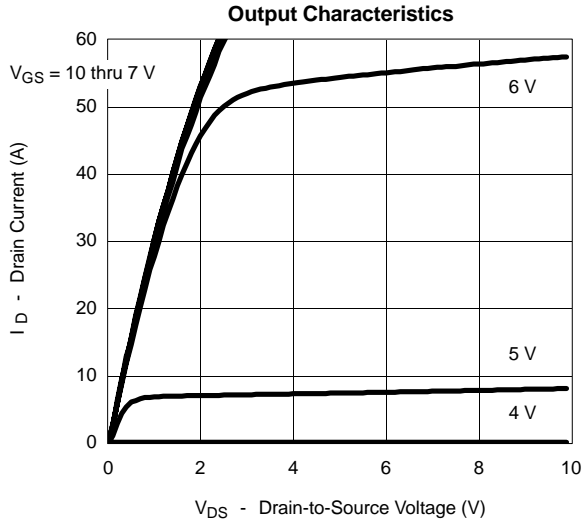
SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{DS} = 0 V, I _D = 250 μA	100			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	2		4	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 80 V, V _{GS} = 0 V			1	μA
		V _{DS} = 80 V, V _{GS} = 0 V, T _J = 125 °C			50	
		V _{DS} = 80 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	60			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 20 A		0.028	0.035	Ω
		V _{GS} = 6 V, I _D = 15 A		0.032	0.040	
		V _{GS} = 10 V, I _D = 20 A, T _J = 125 °C			0.067	
		V _{GS} = 10 V, I _D = 20 A, T _J = 175 °C			0.087	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 30 A	10			S
Dynamic^b						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		2000		pF
Output Capacitance	C _{oss}			210		
Reverse Transfer Capacitance	C _{rss}			77		
Total Gate Charge ^c	Q _g	V _{DS} = 50 V, V _{GS} = 10 V, I _D = 30 A		35	55	nC
Gate-Source Charge ^c	Q _{gs}			10		
Gate-Drain Charge ^c	Q _{gd}			10		
Gate Resistance	R _G			4.5		Ω
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 50 V, R _L = 1.67 Ω I _D ≅ 30 A, V _{GEN} = 10 V, R _G = 2.5 Ω		11	20	ns
Rise Time ^c	t _r			65	100	
Turn-Off Delay Time ^c	t _{d(off)}			30	45	
Fall Time ^c	t _f			55	85	
Source-Drain Diode Ratings and Characteristics (T_C = 25 °C)^b						
Continuous Current	I _S				34	A
Pulsed Current	I _{SM}				60	
Forward Voltage ^a	V _{SD}	I _F = 20 A, V _{GS} = 0 V		1.0	1.5	V
Reverse Recovery Time	t _{rr}	I _F = 60 A, di/dt = 100 A/μs		125	200	ns
Peak Reverse Recovery Current	I _{RM(REC)}			4.5	7	A
Reverse Recovery Charge	Q _{rr}			0.28	0.7	μC

Notes

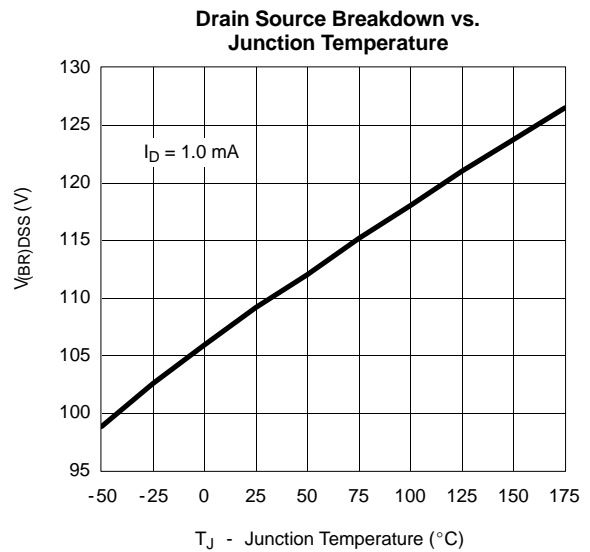
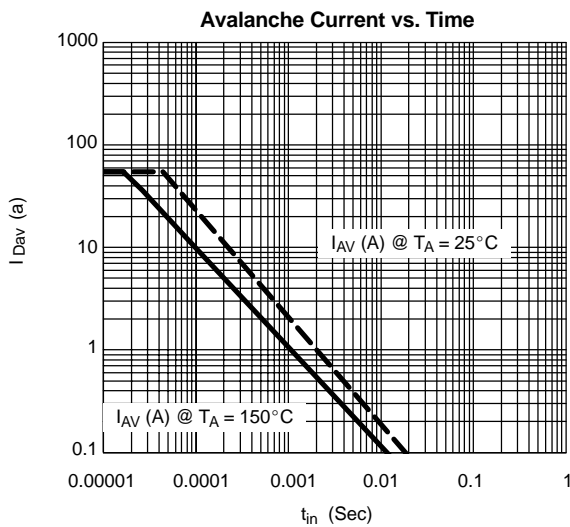
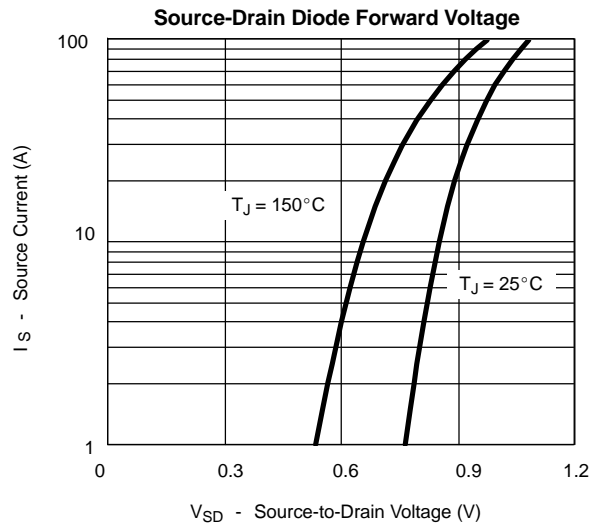
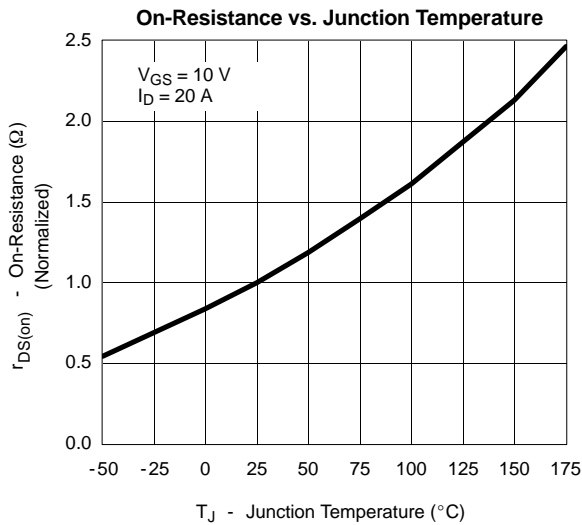
- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.
- Independent of operating temperature.



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



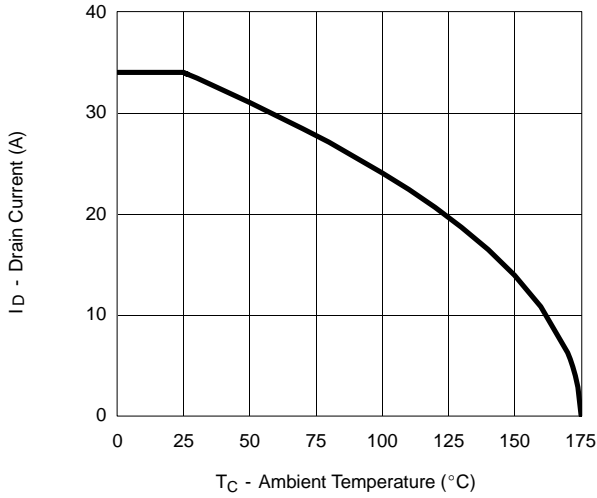
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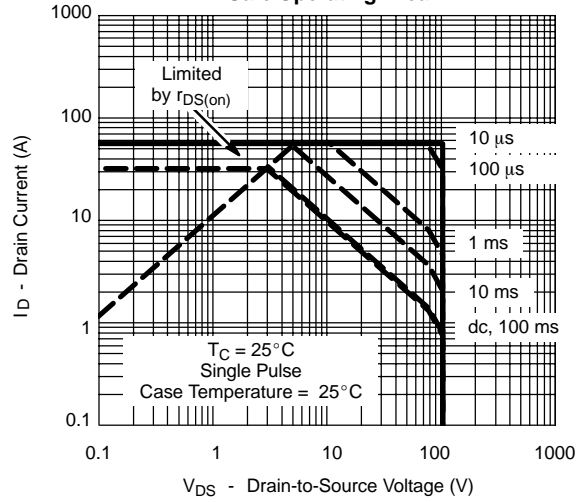


THERMAL RATINGS

Maximum Avalanche and Drain Current vs. Case Temperature



Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case

