TEMIC

Siliconix

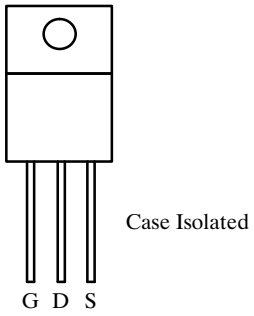
2N7085

N-Channel Enhancement-Mode Transistor

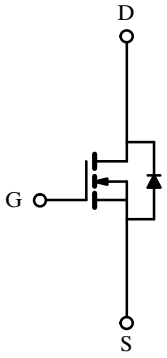
Product Summary

$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A)
100	0.075	20

TO-257AB
Hermetic Package



Top View



N-Channel MOSFET

Absolute Maximum Ratings (T_C = 25°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 = 150°C)	T_C = 25°C	I_D	20	A
	T_C = 100°C		12	
Pulsed Drain Current		I_{DM}	80	
Maximum Power Dissipation	T_C = 25°C	P_D	60	W
	T_C = 100°C		20	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	−55 to 150	°C
Lead Temperature ($^1/_{16}$" from case for 10 sec.)		T_L	300	

Thermal Resistance Ratings

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient	R_{thJA}		80	°C/W
Maximum Junction-to-Case	R_{thJC}		2.1	
Case-to-Sink	R_{thCS}	1.0		

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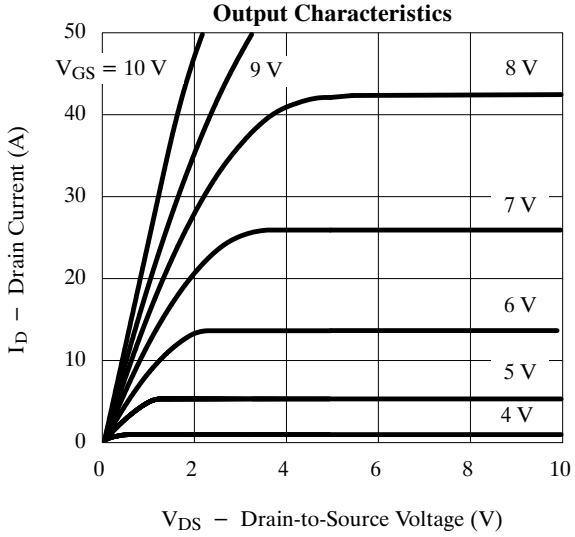
Specifications (T_J = 25°C Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Limit			Unit
			Min	Typ[a]	Max	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 250 µA	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 µA	2.0		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} = 80 V, V_{GS} = 0 V			25	µA
		V_{DS} = 80 V, V_{GS} = 0 V, T_J = 125°C			250	
On-State Drain Current[b]	$I_{D(on)}$	V_{DS} = 10 V, V_{GS} = 10 V	20			A
Drain-Source On-State Resistance[b]	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 12 A		0.06	0.075	Ω
		V_{GS} = 10 V, I_D = 12 A, T_J = 125°C		0.11	0.14	
Forward Transconductance[b]	g_{fs}	V_{DS} = 15 V, I_D = 12 A	5.0	8.0		S
Dynamic						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		1400		pF
Output Capacitance	C_{oss}			480		
Reverse Transfer Capacitance	C_{rss}			110		
Total Gate Charge[c]	Q_g	V_{DS} = 50 V, V_{GS} = 10 V, I_D = 20 A		35	50	nC
Gate-Source Charge[c]	Q_{gs}			10	20	
Gate-Drain Charge[c]	Q_{gd}			18	25	
Turn-On Delay Time[c]	$t_{d(on)}$	V_{DD} = 50 V, R_L = 2.5 Ω I_D ≅ 20 A, V_{GEN} = 10 V, R_G = 4.7 Ω		13	30	ns
Rise Time[c]	t_r			85	120	
Turn-Off Delay Time[c]	$t_{d(off)}$			35	80	
Fall Time[c]	t_f			75	95	
Source-Drain Diode Ratings and Characteristics						
Continuous Current	I_S				20	A
Pulsed Current	I_{SM}				80	
Diode Forward Voltage[b]	V_{SD}	I_F = 20 A, V_{GS} = 0 V			2.5	V
Reverse Recovery Time	t_{rr}	I_F = 20 A, di/dt = 100 A/µs		150	400	ns
Reverse Recovery Charge	Q_{rr}			0.5		µC

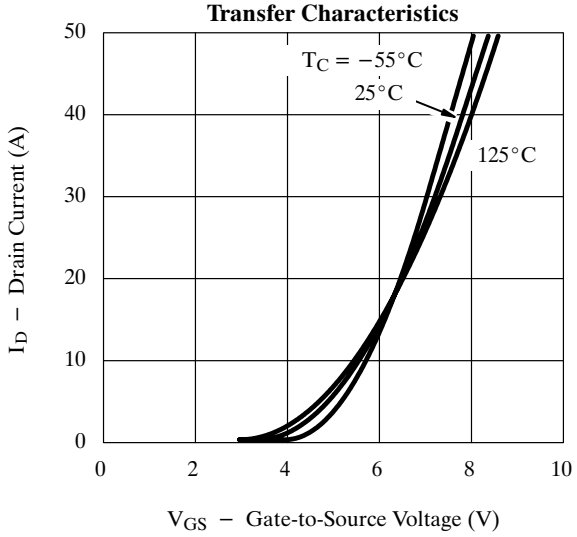
Notes:
a. For design aid only; not subject to production testing.
b. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2%.
c. Independent of operating temperature.

Typical Characteristics (25°C Unless Otherwise Noted)

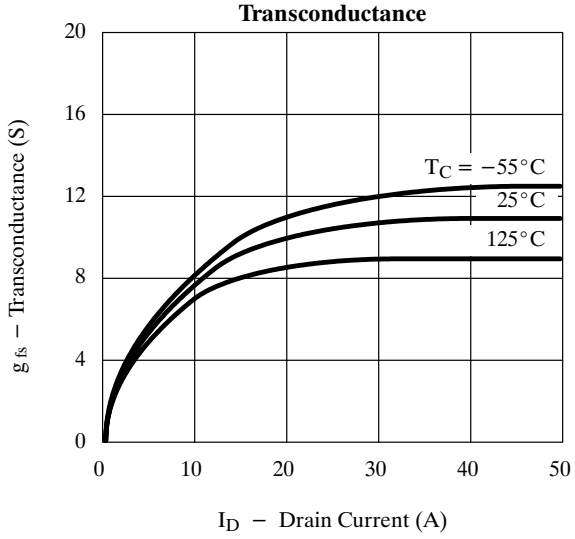
Output Characteristics



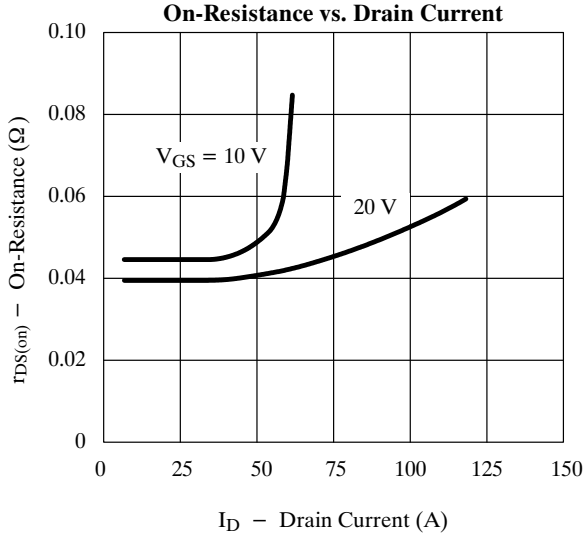
Transfer Characteristics



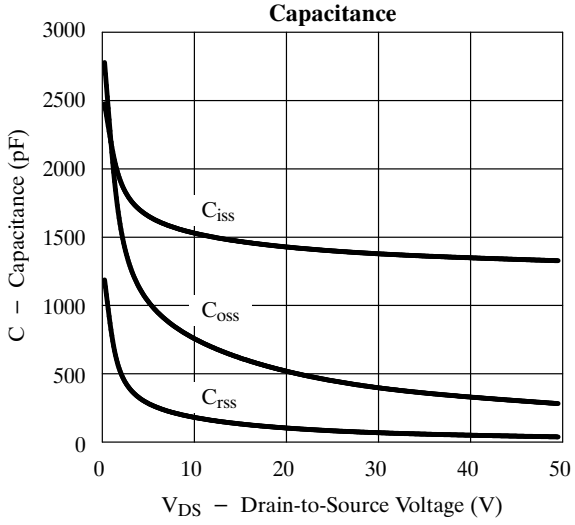
Transconductance



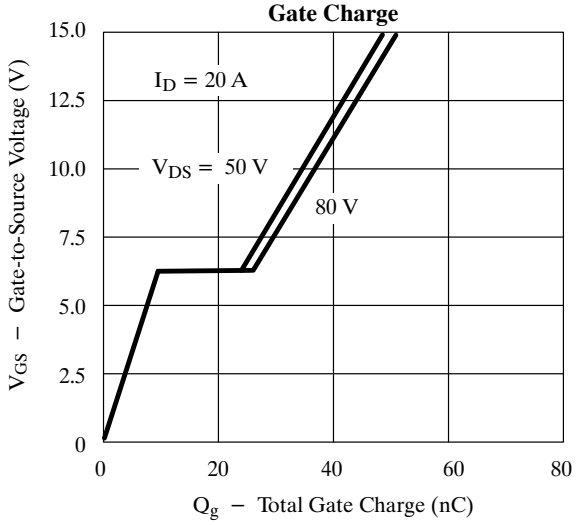
On-Resistance vs. Drain Current



Capacitance



Gate Charge



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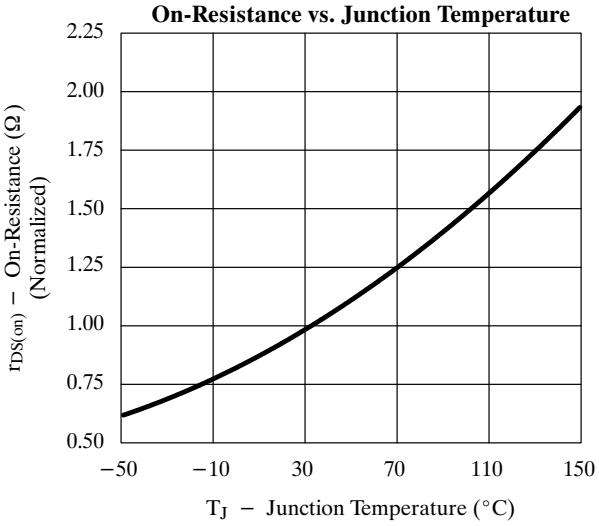
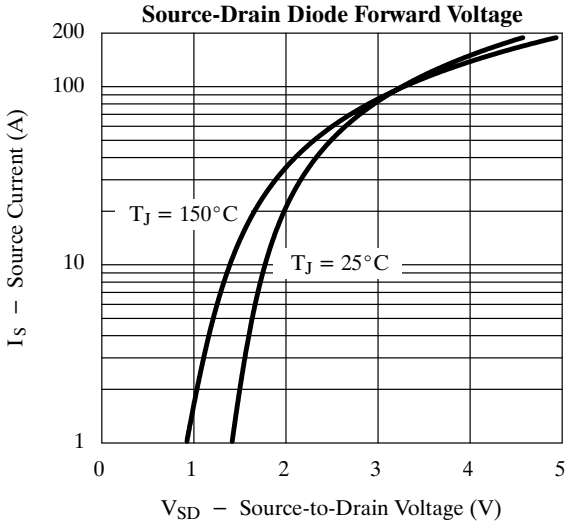
Typical Characteristics (25°C Unless Otherwise Noted)





Thermal Ratings