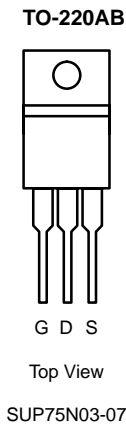




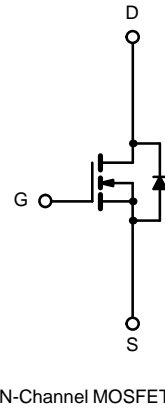
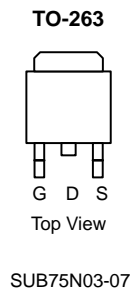
## N-Channel 30-V (D-S) 175°C MOSFET

PRODUCT SUMMARY		
$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
30	0.007 @ $V_{GS} = 10$ V	75 <sup>a</sup>
	0.01 @ $V_{GS} = 4.5$ V	70

**175°C Rated**  
Maximum Junction Temperature  
**TrenchFET®**  
Power MOSFETs



DRAIN connected to TAB



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)					
Parameter		Symbol	Limit	Unit	
Drain-Source Voltage		$V_{DS}$	30	V	
Gate-Source Voltage		$V_{GS}$	$\pm 20$		
Continuous Drain Current ( $T_J = 175^\circ\text{C}$ )	$T_C = 25^\circ\text{C}$	$I_D$	75 <sup>a</sup>	A	
	$T_C = 100^\circ\text{C}$		64		
Pulsed Drain Current		$I_{DM}$	240		
Avalanche Current		$I_{AR}$	75		
Repetitive Avalanche Energy <sup>b</sup>		$L = 0.1$ mH	$E_{AR}$	280	mJ
Power Dissipation		$T_C = 25^\circ\text{C}$	$P_D$	120 <sup>c</sup>	W
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 (TO-263) <sup>d</sup>	$R_{thJA}$	40	$^\circ\text{C/W}$
	Free Air (TO-220AB)		62.5	
Junction-to-Case		$R_{thJC}$	1.25	

Notes:

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



MOSFET SPECIFICATIONS (T <sub>J</sub> = 25° C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 250 μA	30			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>DS</sub> = 250 μA	1	2		
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ± 20 V			± 100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 0 V			1	μA
		V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 125° C			50	
		V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 175° C			150	
On-State Drain Current <sup>a</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> = 5 V, V <sub>GS</sub> = 10 V	120			A
Drain-Source On-State Resistance <sup>a</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 30 A		0.006	0.007	Ω
		V <sub>GS</sub> = 10 V, I <sub>D</sub> = 30 A, T <sub>J</sub> = 125° C			0.011	
		V <sub>GS</sub> = 10 V, I <sub>D</sub> = 30 A, T <sub>J</sub> = 175° C			0.015	
		V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 20 A			0.01	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 30 A	20			S
<b>Dynamic<sup>b</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 25 V, f = 1 MHz		5600		pF
Output Capacitance	C <sub>oss</sub>			1100		
Reverse Transfer Capacitance	C <sub>rss</sub>			450		
Total Gate Charge <sup>c</sup>	Q <sub>g</sub>	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 10 V, I <sub>D</sub> = 75 A		70	130	nC
Gate-Source Charge <sup>c</sup>	Q <sub>gs</sub>			18		
Gate-Drain Charge <sup>c</sup>	Q <sub>gd</sub>			10		
Turn-On Delay Time <sup>c</sup>	t <sub>d(on)</sub>	V <sub>DD</sub> = 15 V, R <sub>L</sub> = 0.2 Ω I <sub>D</sub> = 75 A, V <sub>GEN</sub> = 10 V, R <sub>G</sub> = 2.5 Ω		18	30	ns
Rise Time <sup>c</sup>	t <sub>r</sub>			12	20	
Turn-Off Delay Time <sup>c</sup>	t <sub>d(off)</sub>			60	120	
Fall Time <sup>c</sup>	t <sub>f</sub>			22	40	
<b>Source-Drain Diode Ratings and Characteristics (T<sub>C</sub> = 25° C)<sup>b</sup></b>						
Continuous Current	I <sub>s</sub>				75	A
Pulsed Current	I <sub>SM</sub>				200	
Forward Voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>F</sub> = 75 A, V <sub>GS</sub> = 0 V		1.2	1.5	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 75 A, di/dt = 100 A/μs		55	100	ns

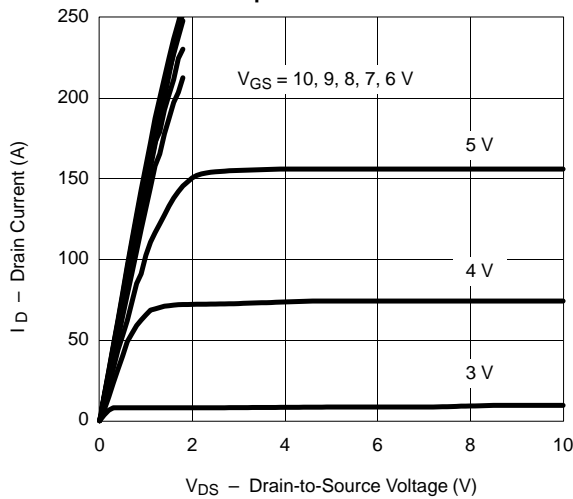
Notes:

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

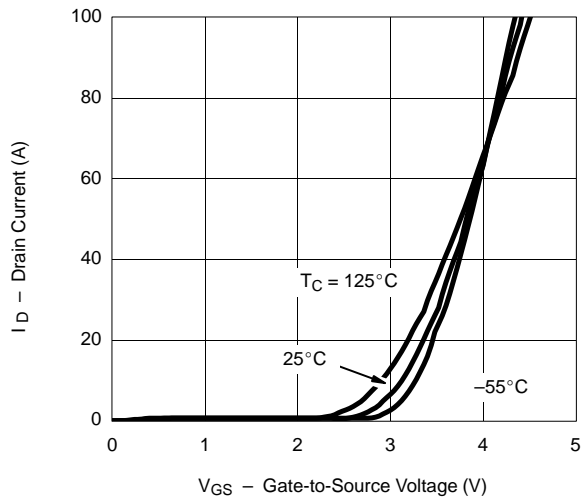


**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

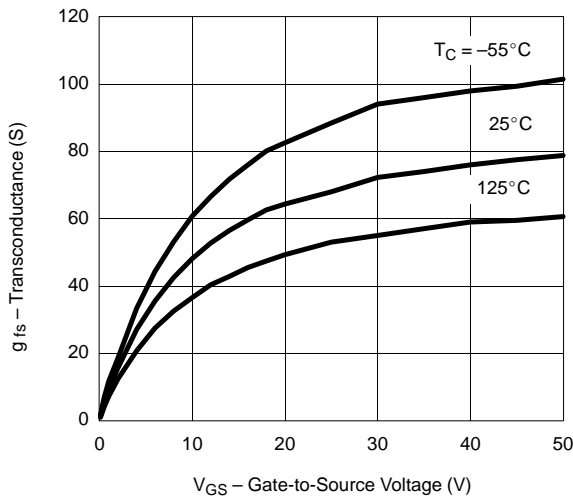
**Output Characteristics**



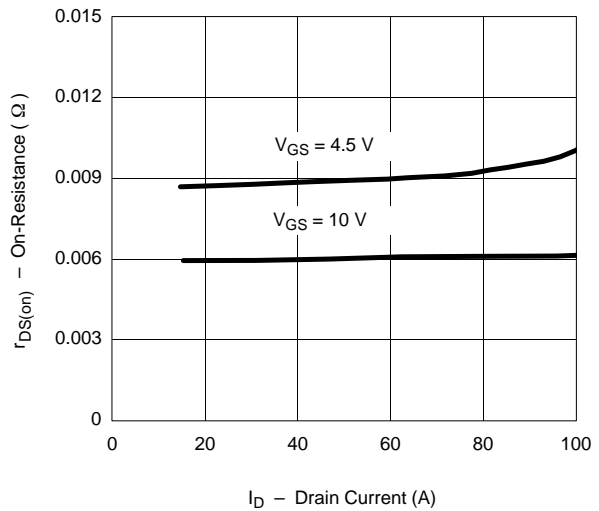
**Transfer Characteristics**



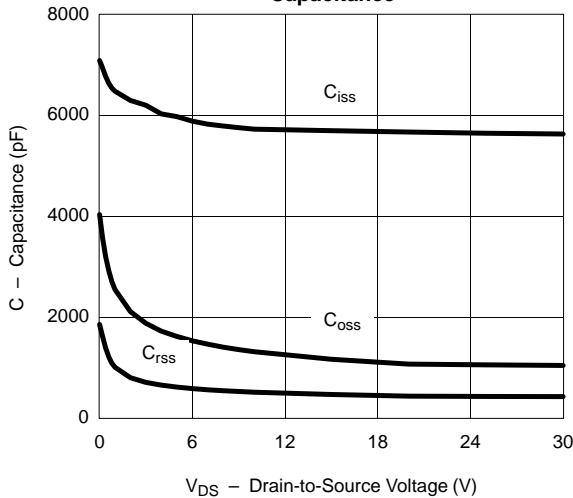
**Transconductance**



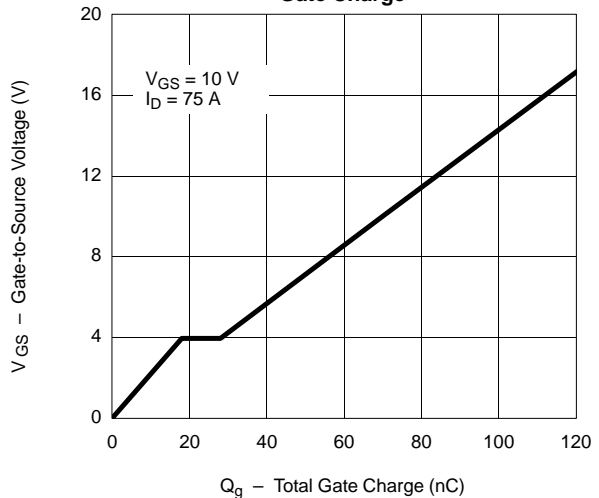
**On-Resistance vs. Drain Current**



**Capacitance**

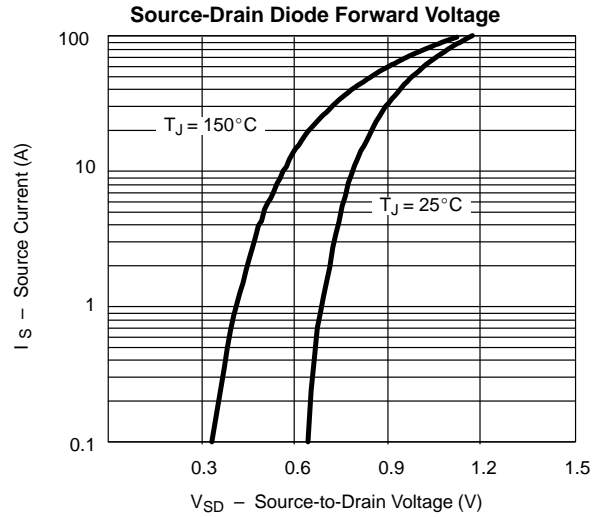
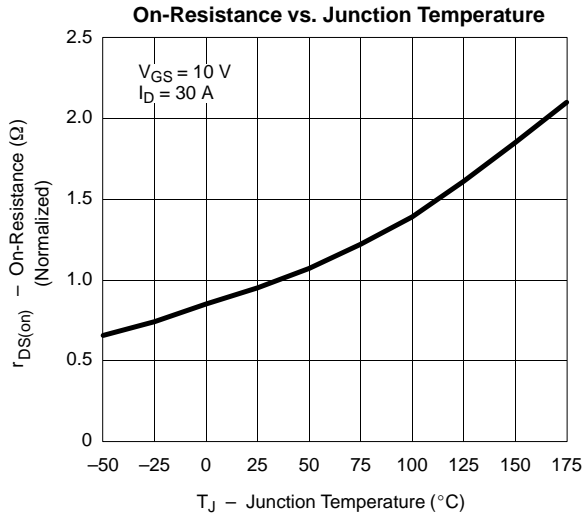


**Gate Charge**





**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**



**THERMAL RATINGS**

