

-30V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	-100A
V_{DSS}	-30V
R_{DS(on)-typ}(@V_{GS}=-10V)	<6.5mΩ(Typ:5mΩ)

FEATURES

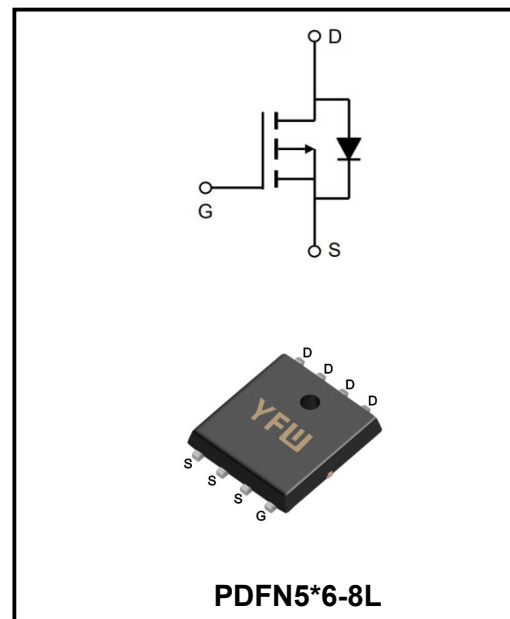
- ♦Advanced Trench Technology
- ♦Excellent R_{DS(ON)} and Low Gate Charge

APPLICATIONS

- ♦Load Switch
- ♦PWM Application
- ♦Power Management

MECHANICAL DATA

- ♦Case: PDFN5*6-8L/NF
- ♦Mounting Position: Any
- ♦Molded Plastic: UL Flammability Classification Rating 94V-0
- ♦Lead free in compliance with EU RoHS 2011/65/EU directive
- ♦Solder bath temperature 275°C maximum,10s per JESD 22-B106



Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DSS}	-30	V
Gate - Source Voltage	V_{GSS}	±20	V
Continuous Drain Current	I_D	-100	A
Pulsed Drain Current (note1)	I_{DM}	-400	A
Single Pulsed Avalanche Energy	E_{AS}	180	mJ
Power Dissipation	P_D	78	W
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance Junction to Case	R_{θJC}	1.2	°C/W
Thermal Resistance, Junction to Ambient	R_{θJA}	41	°C/W

Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D = -250\mu A$	BV_{DSS}	-30	-	-	V
Zero Gate Voltage Drain Current	$V_{DS} = -30V$, $V_{GS}=0V$,	I_{DSS}	-	-	-1	μA
Gate to Body Leakage Current	$V_{DS}=0V$, $V_{GS}= \pm 20V$	I_{GSS}	-	-	± 100	nA
Gate Threshold Voltage	$V_{DS}=V_{GS}$, $I_D = -250\mu A$	$V_{GS(th)}$	-1.1	-	-2.2	V
Static Drain-Source on-Resistance	$V_{GS} = -10V$, $I_D = -20A$	$R_{DS(ON)}$	-	5	6.5	m Ω
	$V_{GS} = -4.5V$, $I_D = -15A$		-	8.3	10	m Ω
Input Capacitance	$V_{DS}=-15V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	3500	-	pF
Output Capacitance		C_{oss}	-	520	-	
Reverse Transfer Capacitance		C_{rss}	-	456	-	
Turn-on Delay Time(Note2)	$V_{DD} = -15V$ $V_{GS} = -10V$ $R_{GEN}=2.7\Omega$ $I_{D0} = -10A$	$t_{d(on)}$	-	6.9		ns
Turn-on Rise Time(Note2)		T_r	-	5.8		ns
Turn-off Delay Time(Note2)		$t_{d(OFF)}$	-	115		ns
Turn-off Fall Time(Note2)		t_f	-	78		ns
Total Gate Charge(Note2)	$V_{DS} = -15V$ $I_D = -10A$ $V_{GS} = -10V$	Q_g	-	63		nC
Gate to Source Charge(Note2)		Q_{gs}	-	9.6		nC
Gate to Drain Charge(Note2)		Q_{gd}	-	14		nC
Maximun Body-Diode Continuous Current		I_S	-	-	-100	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	-400	A
Drain to Source Diode Forward Voltage	$V_{GS}=0V$, $I_S=-30A$, $T_J=25$	V_{SD}	-	-	-1.2	V
Reverse Recovery Time	$V_{GS}=0V$, $I_S = -10A$, $di/dt=100A/\mu s$	trr	-	21	-	ns
Reverse Recovery Charge		Q_{rr}	-	9.8	-	nC

Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

RATINGS AND CHARACTERISTIC CURVES

Figure 1: Power De-rating

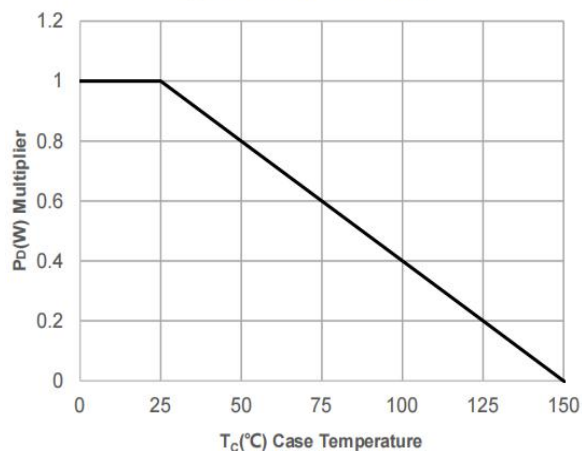


Figure 2: Current De-rating

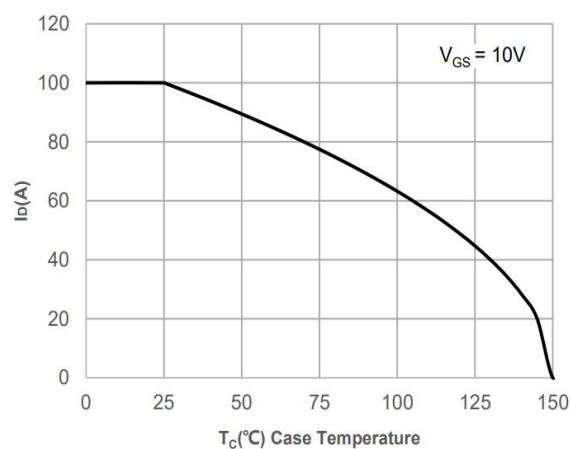


Figure 3: Normalized Maximum Transient Thermal Impedance

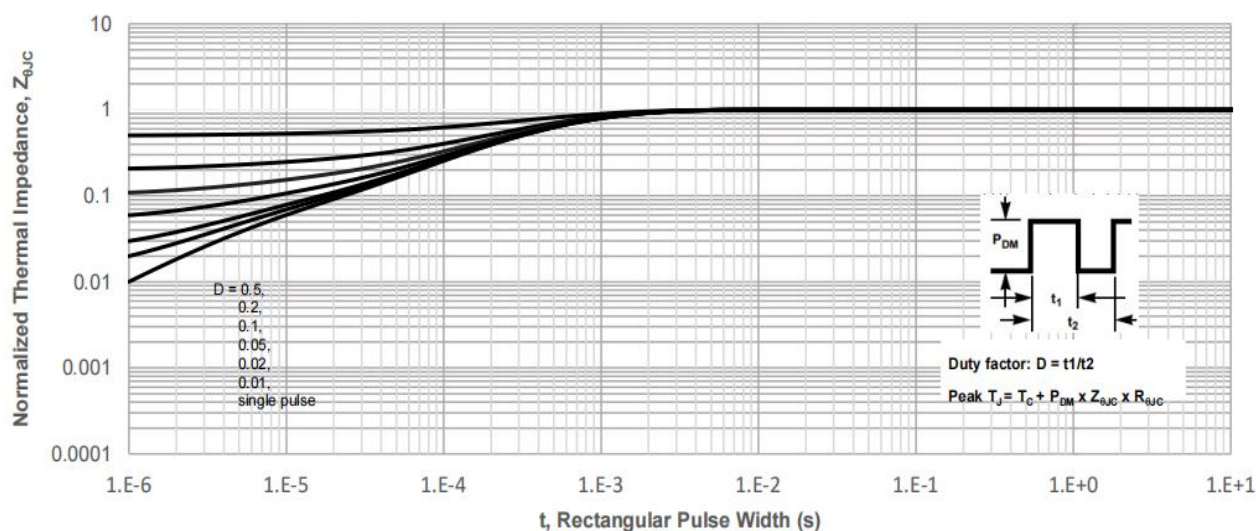
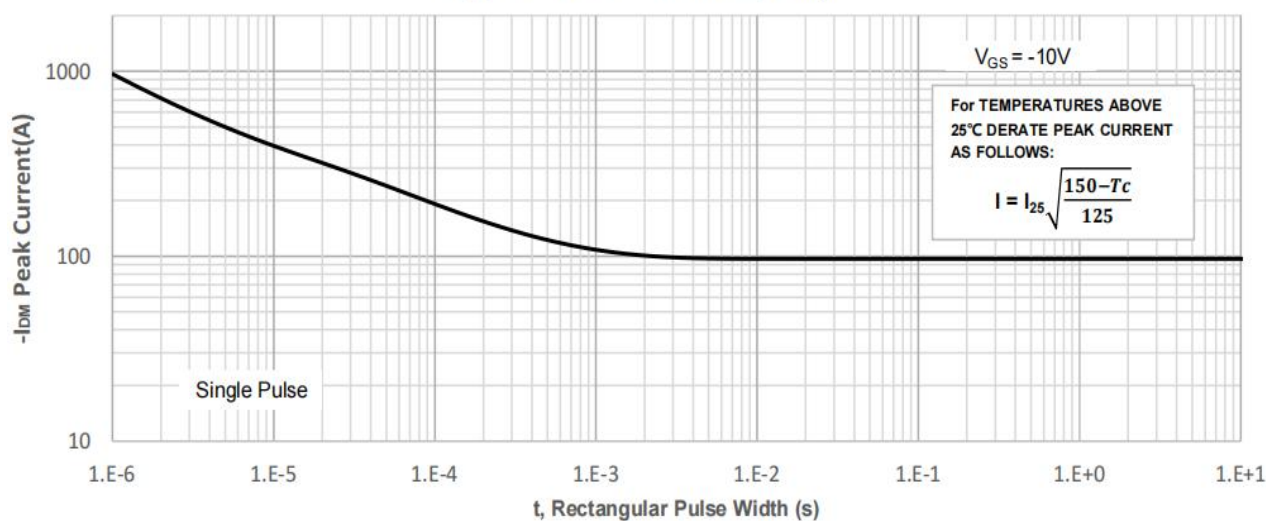


Figure 4: Peak Current Capacity



RATINGS AND CHARACTERISTIC CURVES

Figure 5: Output Characteristics

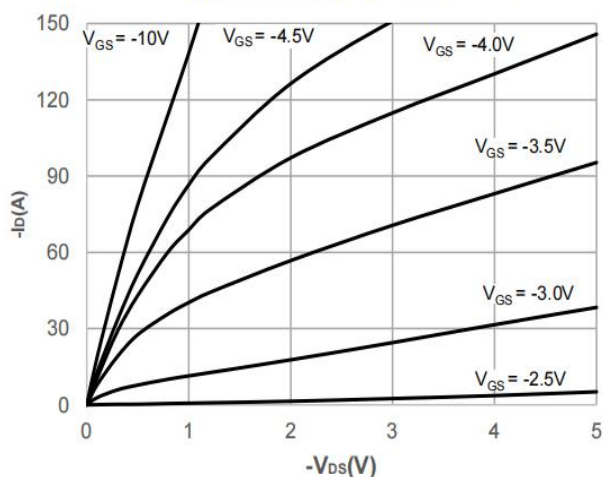


Figure 6: Typical Transfer Characteristics

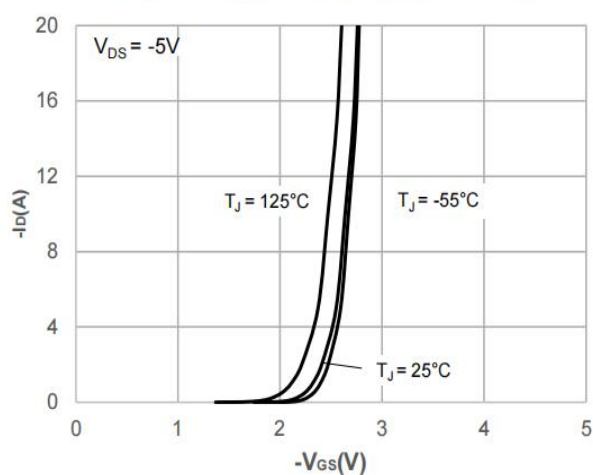


Figure 7: On-resistance vs. Drain Current

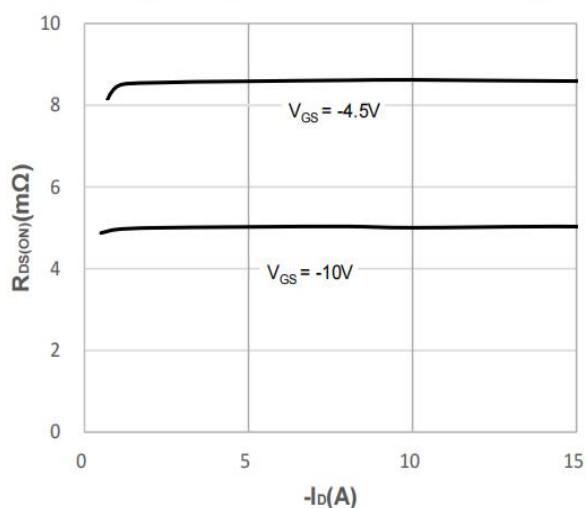


Figure 8: Body Diode Characteristics

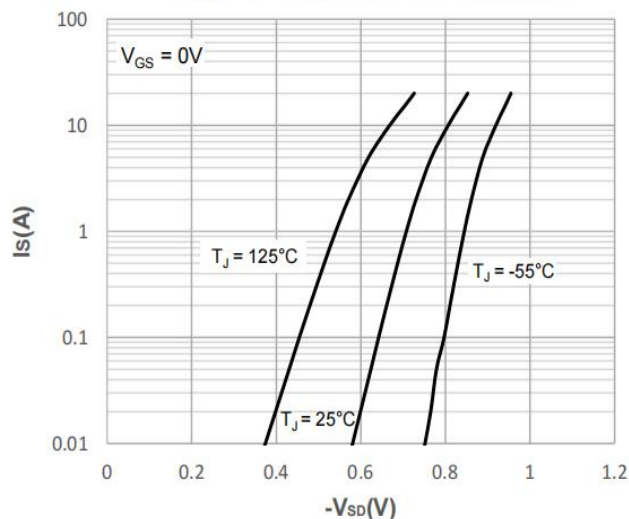


Figure 9: Gate Charge Characteristics

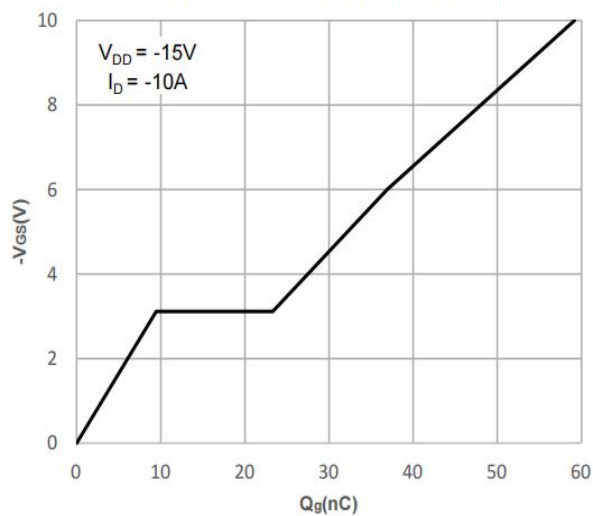
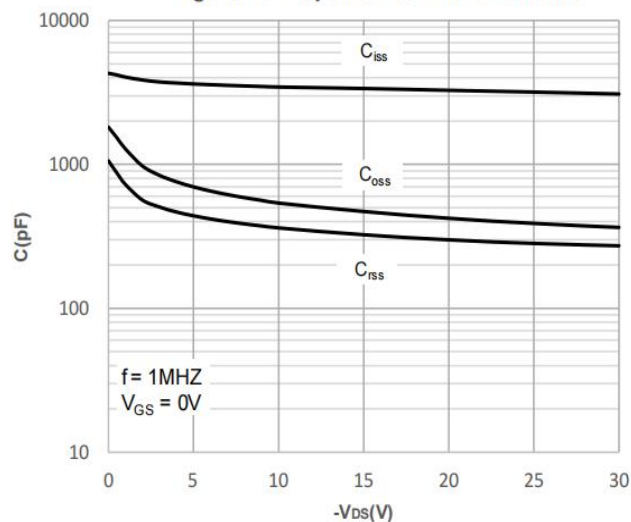


Figure 10: Capacitance Characteristics



RATINGS AND CHARACTERISTIC CURVES

Figure 11: Normalized Breakdown voltage vs. Junction Temperature

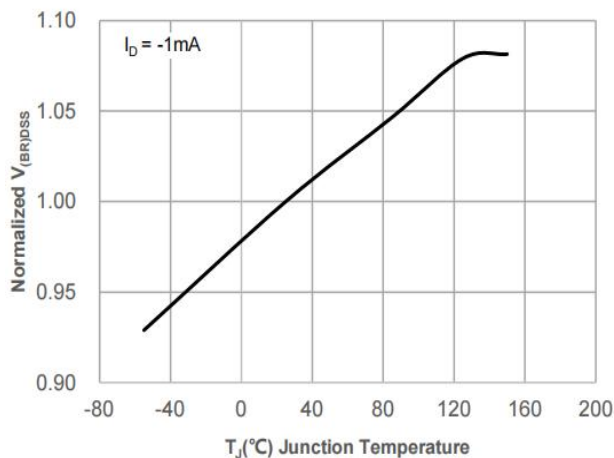


Figure 12: Normalized on Resistance vs. Junction Temperature

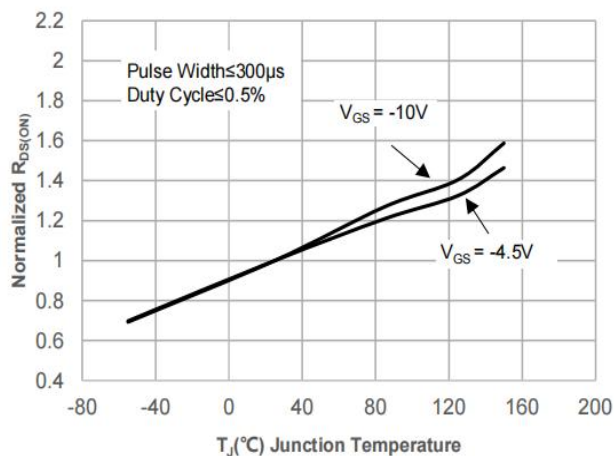


Figure 13: Normalized Threshold Voltage vs. Junction Temperature

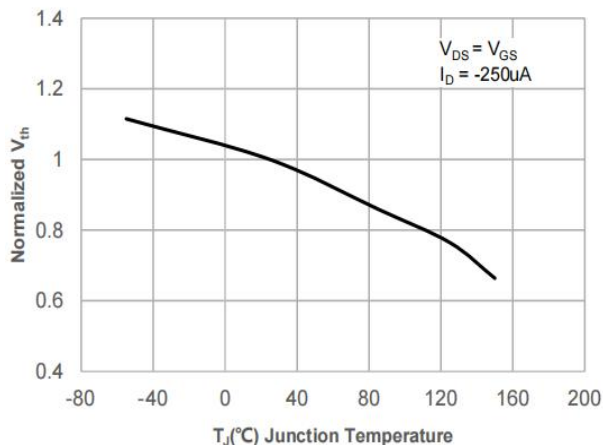


Figure 14: $R_{DS(ON)}$ vs. V_{GS}

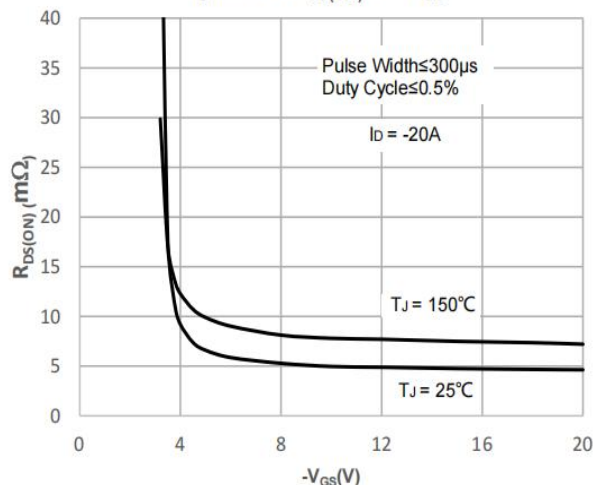
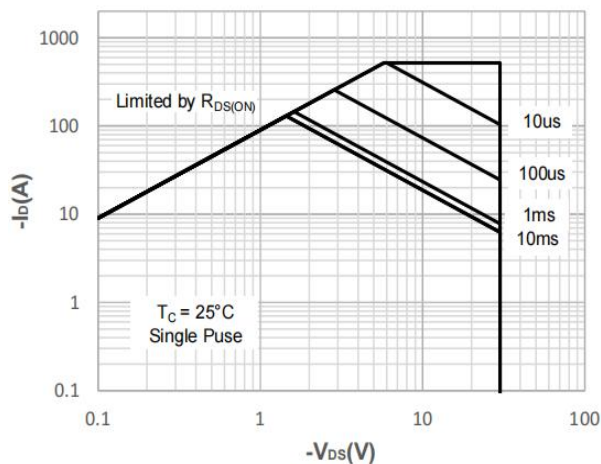
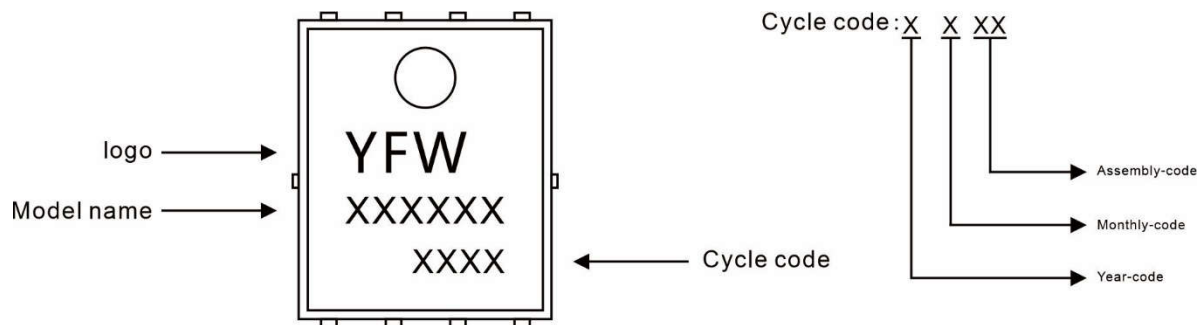


Figure 15: Maximum Safe Operating Area



Marking Diagram



Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFW100P03NF	PDFN5*6-8L	0.0032oz(0.093g)	5000pcs/reel	10000pcs/box 50000pcs/Carton

Package Dimensions

PDFN5*6-8L

Dim	Millimeter		mil	
	Min.	Max.	Min.	Max.
A	0.9	1.2	35	43
A2	0.204	0.304	8	12
b	0.4ref.		16ref.	
b1	0.2	0.4	8	16
D	5.0	5.3	197	209
D1	4.84	5.24	191	206
E	5.95	6.35	234	250
E1	3.275	3.675	129	145
E2	5.69	6.09	224	232
e	1.27typ.		50typ.	
K	1.29typ.		51typ.	
L	0.585	0.785	23	27
L1	0.7typ.		28typ.	

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