

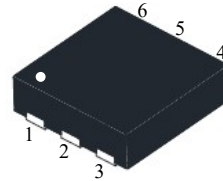


SM03P045KTN6H

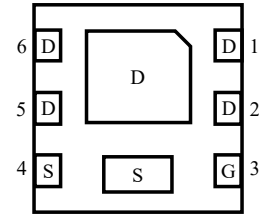
P-Channel Enhancement Mode Field Effect Transistor

FEATURES

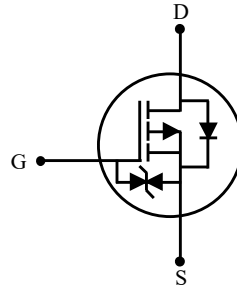
- ESD protected gate.
- Suffix "H" indicates Halogen-free parts, ex.SM03P045TKN6H.



Top View



Bottom View



D	Drain
G	Gate
S	Source

Maximum Ratings ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit	
Drain-Source Voltage	V_{DS}	-30	V	
Gate-Source Voltage	V_{GS}	± 20	V	
Drain Current	I_D	$T_A = 25\text{ }^\circ\text{C}$	-6.5	A
		$T_C = 25\text{ }^\circ\text{C}$	-10.0	
Pulsed Drain Current	(Note 1) I_{DM}	-36	A	
Power Dissipation	(Note 2) P_D	2	W	
Thermal Resistance from Junction to Ambient	(Note 2) $R_{\theta JA}$	62.5	$^\circ\text{C/W}$	
Thermal Resistance from Junction to Case	$R_{\theta JC}$	25.0		
Operating and Storage Temperature Range	T_J, T_{stg}	- 55 to + 150	$^\circ\text{C}$	

Note :

1. Pulse width $\leq 100\mu\text{s}$, Duty Cycle $\leq 2\%$, Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)} = 150\text{ }^\circ\text{C}$
2. Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch² copper plate in still air.



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Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Static						
Drain Source Breakdown Voltage	$I_D = -250\mu\text{A}$	V_{DSS}	-30	-	-	V
Gate Threshold Voltage	$V_{GS} = V_{DS}, I_D = -250\mu\text{A}$	$V_{GS(th)}$	-1.2	-	-2.5	V
Zero Gate Voltage Drain Current	$V_{DS} = -24\text{V}$	I_{DSS}	-	-	-1	μA
Gate-Body Leakage Current	$V_{GS} = \pm 16\text{V}$	I_{GSS}	-	-	± 10	μA
Drain-Source On-State Resistance	$V_{GS} = -10\text{V}, I_D = -10\text{A}$	$R_{DS(on)}$	-	-	30	m Ω
	$V_{GS} = -4.5\text{V}, I_D = -5\text{A}$		-	-	45	
Dynamic						
Forward Transfer Admittance	$V_{DS} = -5\text{V}, I_D = -10\text{A}$	g_{FS}	-	16.5	-	S
Gate Resistance	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$	R_g	-	4.8	-	Ω
Total Gate Charge	$V_{DS} = -15\text{V}, I_D = -10\text{A}, V_{GS} = -4.5\text{V}$	Q_g	-	9.0	-	nC
Gate-Source Charge			Q_{gs}	-	4.7	
Gate-Drain Charge		Q_{gd}	-	3.0	-	
Input Capacitance		C_{iss}	-	1195	-	
Output Capacitance	$V_{DS} = -15\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$	C_{oss}	-	125	-	pF
Reverse Transfer Capacitance		C_{rss}	-	94	-	
Turn-On Delay Time	$V_{DS} = -15\text{V}, V_{GS} = -10\text{V}, I_D = -10\text{A}, R_g = 3.3\Omega$	$t_{d(on)}$	-	9.3	-	ns
Turn-On Rise Time		t_r	-	31.0	-	
Turn-Off Delay Time		$t_{d(off)}$	-	14.0	-	
Turn-Off Fall Time		t_f	-	2.8	-	
Drain-Source Body Diode						
Drain-Source Diode Forward Voltage	$I_S = -1\text{A}, V_{GS} = 0\text{V}$	V_{SD}	-	-	-1.2	V
Diode Continuous Forward Current	-	I_S	-	-	-6.5	A
Reverse Recovery Time	$I_S = -10\text{A}, di/dt = 100\text{A}/\mu\text{s}$	t_{rr}	-	9.7	-	ns
Reverse Recovery Charge		Q_{rr}	-	4	-	nC



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RATINGS AND CHARACTERISTIC CURVES

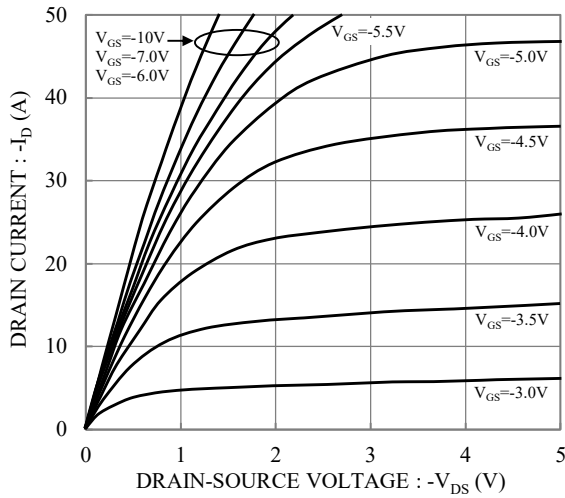


Fig.1 Typical Output Characteristics

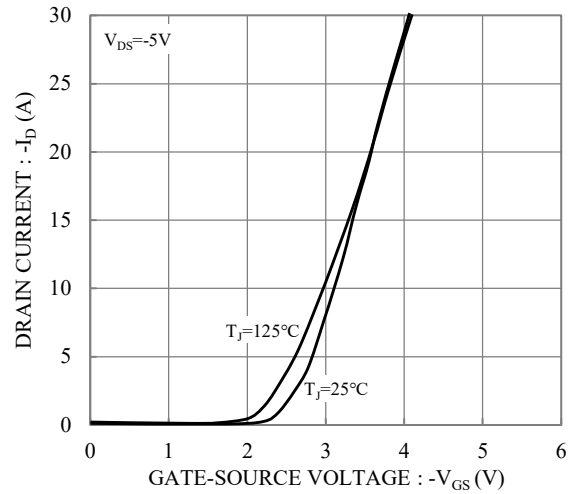


Fig.2 Typical Transfer Characteristics

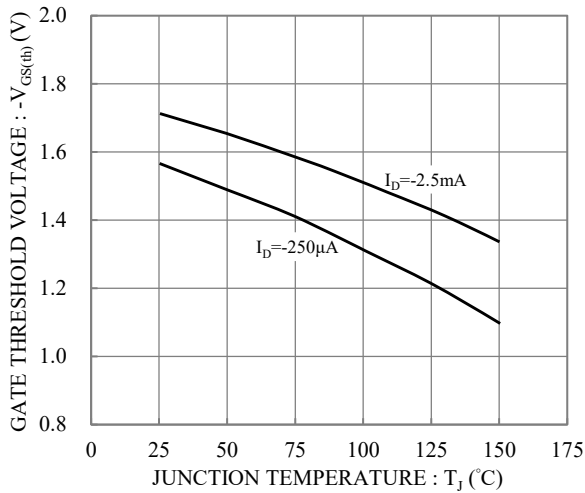


Fig.3 Gate Threshold Voltage vs. Junction Temperature

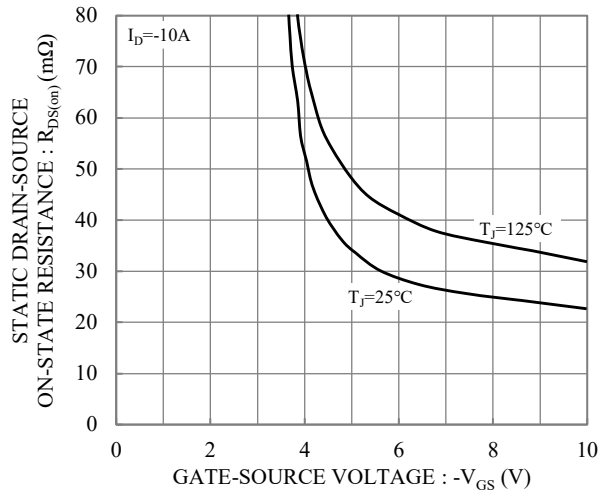


Fig.4 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

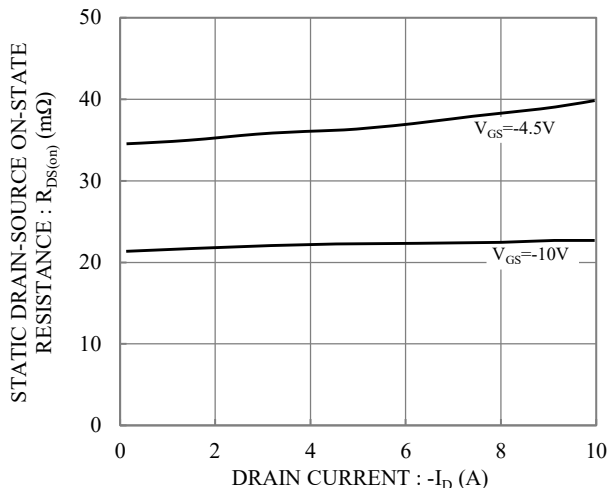


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

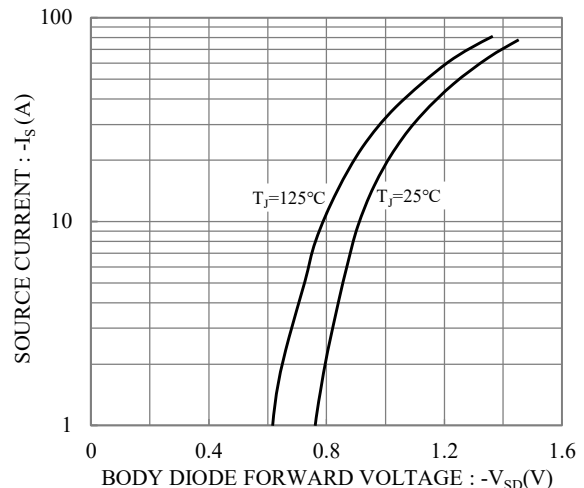


Fig.6 Body Diode Forward Voltage vs. Source Current



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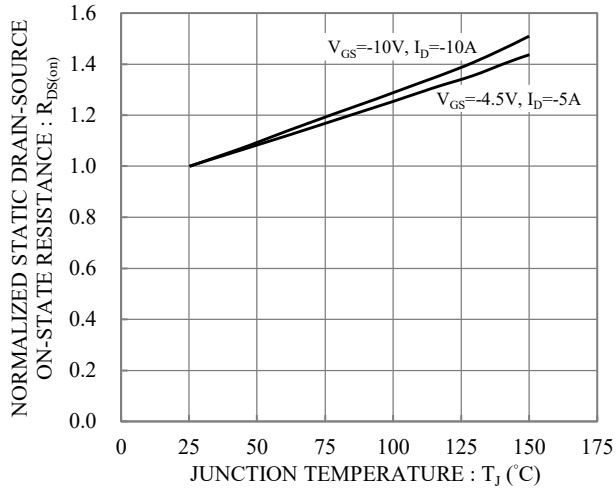


Fig.7 Drain-Source On-State Resistance vs. Junction Temperature

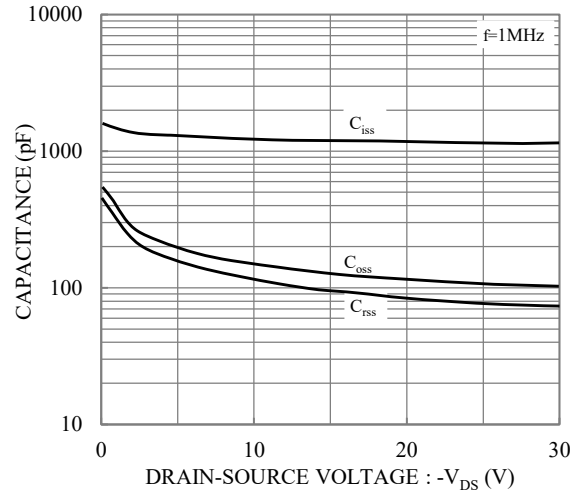


Fig.8 Capacitance vs. Drain-Source Voltage

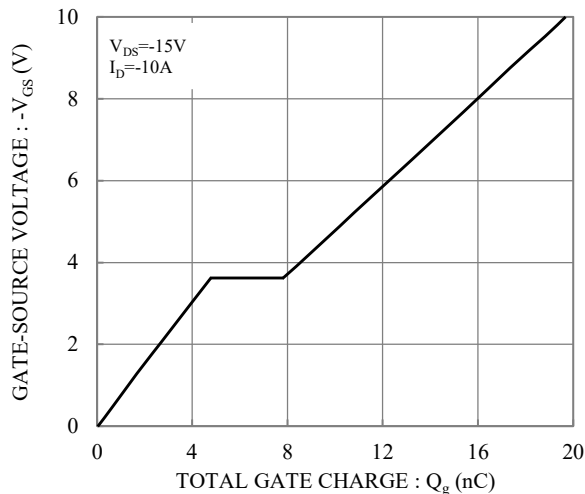


Fig.9 Gate Charge

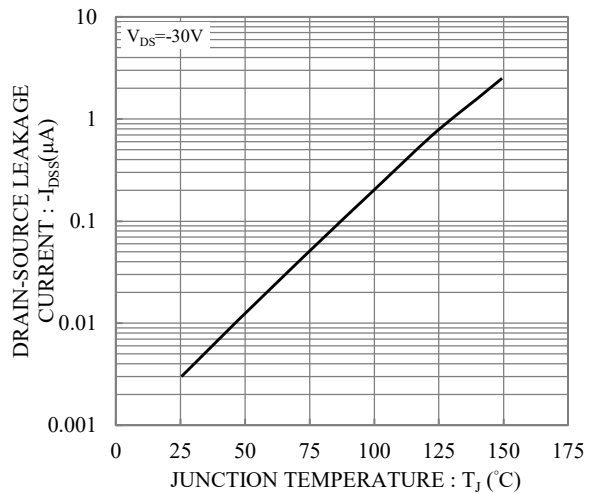


Fig.10 Drain-Source Leakage Current vs. Junction Temperature

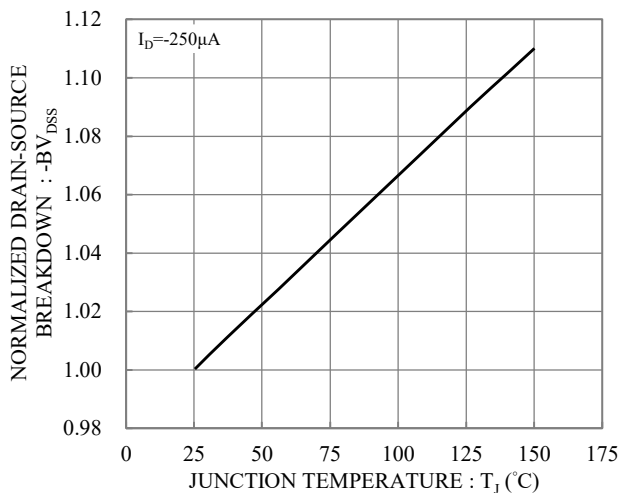
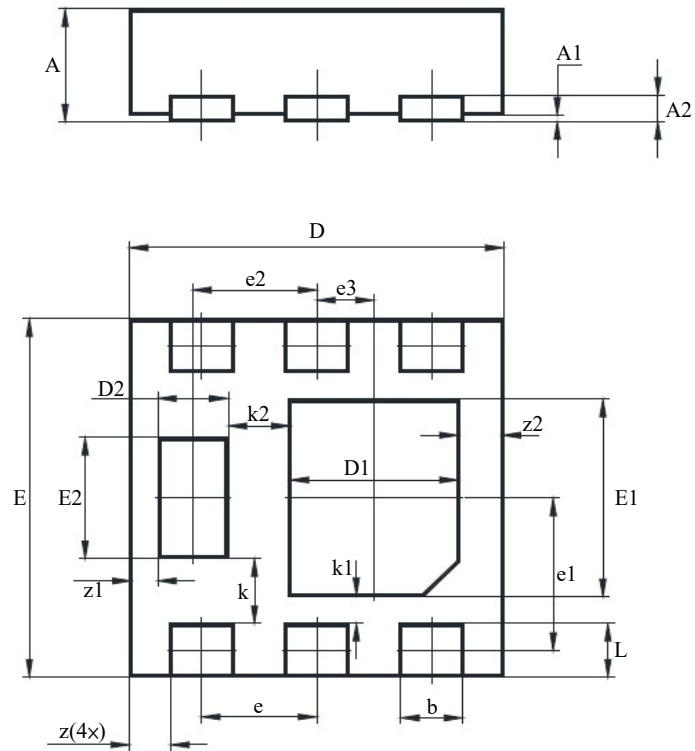


Fig.11 Brekdown Voltage vs. Junction Temperature



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Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.550	0.650	0.022	0.026
A1	0.000	0.050	0.000	0.002
A2	0.15 TYP.		0.006 TYP.	
b	0.250	0.350	0.010	0.014
D	1.950	2.050	0.077	0.081
D1	0.850	1.050	0.033	0.041
D2	0.330	0.430	0.013	0.017
E	1.950	2.050	0.077	0.081
E1	1.050	1.250	0.041	0.049
E2	0.650	0.750	0.026	0.030
L	0.225	0.325	0.009	0.013
e	0.650 BSC		0.026 BSC	
e1	0.863 BSC		0.034 BSC	
e2	0.700 BSC		0.028 BSC	
e3	0.325 BSC		0.013 BSC	
k	0.370 BSC		0.015 BSC	
k1	0.150 BSC		0.006 BSC	
k2	0.360 BSC		0.014 BSC	
z	0.200 BSC		0.008 BSC	
z1	0.110 BSC		0.004 BSC	
z2	0.200 BSC		0.008 BSC	



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SUGGESTED SOLDER PAD LAYOUT

